

SMOKING CESSATION: IMPLEMENTATION OF A GROUP
INTERVENTION IN A COMMUNITY
MENTAL HEALTH SETTING

by

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ABSTRACT

Individuals with mental illnesses smoke tobacco at a much higher rate than the general population. Given the elevated rate of morbidity and mortality in this population, providing tobacco cessation programs within community mental health clinics is an important step in improving health outcomes. The comprehensive literature review of 56 peer reviewed articles highlights key factors affecting tobacco use in mental illness, including biologic and psychosocial variables, evidence-based guidelines and interventions used to support tobacco cessation in this population, and barriers and incentives for treatment. Based on this literature, an eight-week, nurse-led smoking cessation program was implemented at a rural Montana based community mental health center. This pilot intervention was the first of its kind within the selected mental health center. In order to determine feasibility, the author shares outcomes in terms of participants' smoking cessation behaviors, cigarette use, and cigarette dependence before and after the eight-week group, as well as limitations and implications for future programs. It is hoped this project will inform practitioners and nurses about factors associated with tobacco use in clients with mental illness to guide future treatment at the community mental health center.

CHAPTER 1

INTRODUCTION TO THE PROJECT

Introduction

Although tobacco use has been in America's spotlight for years now, use in persons with mental illnesses has only recently been touted as a "neglected epidemic" (Schroeder & Morris, 2009). This paper speaks to the background and significance of the problem on both worldwide and local scales. Review of the current literature highlights factors underlying the problem and presents evidence-based solutions for helping to address cessation. This evidence was used to guide implementation of a nurse-led smoking cessation program in a community mental health center in Montana.

Background and Significance

Smoking is the single most preventable cause of death and according to the Centers for Disease Control and Prevention (CDC), about one-half million (500,000) people in the United States die annually related to tobacco use (2014a). One quarter of U.S. adults use tobacco and one out of five U.S. adults smoke cigarettes. People who smoke have three times greater mortality and die roughly ten years earlier than those who have never smoked, mostly related to various neoplasms, cardiovascular diseases, and pulmonary diseases (CDC, 2014b; Jha et al., 2013).

One in five U.S. adults have some form of mental illness. People with mental illnesses smoke at nearly two times the rate of the general population (CDC, 2013).

Individuals with serious mental illness (schizophrenia, major depressive disorder, and bipolar disorder) die approximately 25 years earlier than the general population (Parks, Svendsen, Singer, & Foti, 2006, p. 5). Sixty percent of these deaths are attributed to cardiovascular, pulmonary, and infectious diseases, all of which are highly related to modifiable risk factors such as smoking tobacco (Parks et al., 2006, p. 5).

According to the 2009-2011 National Survey on Drug Use and Health, individuals with mental illness (excluding those with a sole diagnosis of substance use disorder) smoked at rates ranging from 34.4% for those with phobia/fear disorders to 88% for individuals with schizophrenia (CDC, 2013). Persons in addiction treatment programs smoke at alarmingly high rates of up to 93% (Substance Abuse and Mental Health Services Administration, 2014b). In the state of Montana, from 2009-2011, 22.4% of residents reported having some form of mental illness. Of the individuals with mental illness, 30.9% smoked, as compared to 24.4% of Montanans without mental illness (CDC, 2013).

Problem

Several guidelines and programs have been developed in order to help healthcare providers treat tobacco use and promote smoking cessation. Progress has been made to reduce tobacco use in the general population (CDC, 2013); however, many vulnerable populations, such as those with mental illness, continue to smoke at high rates (Cook et al., 2014).

For people with mental illness, interactions with the mental health system may be their only access to smoking cessation counseling and intervention. Yet, research indicates that mental health providers are less likely to assess and treat tobacco dependence (Himelhoch, Riddle, & Goldman, 2014). Furthermore, people with more severe forms of mental illness receive smoking advice less often than individuals with mild or no mental illness (Mitchell, Vancampfort, De Hert, & Stubbs, 2015). The inconsistency in treatment may be due to training or knowledge deficit of mental health providers (Williams et al., 2010) or mistaken beliefs about this populations' motivation to quit (Himelhoch et al., 2014). Clients' lack of awareness about the dangers of tobacco use and deficient treatment is also likely contributing to persistent high smoking rates and subsequent morbidity and mortality in this vulnerable population (Mitchell et al., 2015).

The 2008 Agency for Healthcare Research & Quality (AHRQ) guidelines for tobacco dependence treatment recommend a combination of nicotine replacement and/or other medications in addition to behavioral interventions such as problem solving, skills training, education, and social support as treatment for tobacco dependence (Fiore et al., 2008). Although the importance of combined behavioral and pharmacologic intervention is clear, the community mental health center where this project was conducted only offers pharmacologic intervention, with little success (S. Darr, personal communication, March 24, 2015). In fact, it appears that the entire community is lacking resources in this area, as no community groups could be found on a search of the Internet. The only resource commonly available is the Montana Quit Line, which many clients with mental illness may have difficulty accessing due to real-world problems like not having a telephone or

internet (Client 2, personal communication, August 17, 2015; Client 3, personal communication, August 20, 2015; Williams et al., 2010, p. 5).

Purpose of the Project

The purpose of this scholarly project was two-fold. First, to gain an understanding of the factors related to smoking in clients with mental illness and second, to assist a group of these clients in reaching their health goals by implementing a nurse driven evidence-based smoking cessation program at the community mental health center. Two questions were developed to guide the literature review and intervention selection.

1. What is known about the relationship between high smoking rates and mental illness?
2. In persons with mental illness, what is the content of smoking cessation interventions and what components, if any, have been linked to higher rates of successful smoking cessation?

CHAPTER 2

REVIEW OF LITERATURE

Introduction

Smoking tobacco affects nearly every organ in the body. It causes cancers of the oropharynx, larynx, esophagus, lung, stomach, liver, pancreas, kidney, bladder, cervix, colon, and blood (leukemia). Smoking is linked to an abundance of diseases including stroke, blindness, periodontal disease, coronary artery disease, diabetes, chronic obstructive pulmonary disease, tuberculosis, problematic female reproductive effects, male sexual dysfunction, and rheumatoid arthritis, to name a few (CDC, 2014b).

Approximately 480,000 humans die each year due to smoking related causes and nearly 200,000 of these deaths are people with mental illness (Morris, Waxmonsky, May, Giese, & Martin, 2009). The following literature review presents a pathway to understanding the biological, psychological, and social factors involved in smoking, as well as evidence-based cessation treatments and barriers and incentives to achieving smoking cessation goals in adults with psychiatric comorbidities.

This literature review was comprised of 56 peer-reviewed articles from Montana State University's electronic databases including CINAHL, PsycInfo, and Cochrane Library, based on combinations of key words: (a) mental illness, (b) psychiatric illness, (c) smoking, (d) tobacco, (e) nicotine, (f) psychosis, (g) smoking cessation, (h) mental health nursing, and (i) nursing interventions. Articles from the past five to ten years were reviewed. The evidence is composed of randomized controlled trials, systematic reviews

and meta- analyses, cross-sectional, longitudinal, and qualitative studies (see Appendix A for evidence table).

Biologic Factors Associated with Tobacco and Mental Illness

The *Diagnostic and Statistical Manual of Mental Disorders 5* defines tobacco use disorder as “a problematic pattern of tobacco use leading to clinically significant impairment or distress...”(American Psychiatric Association, 2013, p. 571). Tobacco smoke is thought to be as addictive as heroin, cocaine, or alcohol (Stahl, 2013). Using tobacco despite significant physical or psychosocial impairment occurs, in part, because of the interaction between nicotine and receptors in the brain.

Nicotine

Acetylcholine is a neurotransmitter involved in physical and mental arousal, memory, learning, and emotions. It transmits neurochemical messages by attaching to acetylcholine receptors in the central nervous system and peripheral nervous system (Jiloha, 2010). Nicotine is very similar to acetylcholine in structure; so similar in fact, that it acts as an agonist on nicotinic acetylcholine receptors (nAChRs), modulating neurotransmitter release. Nicotine, unlike acetylcholine, binds for a long period of time on the receptor, causing desensitization and subsequent upregulation of nAChRs (Jiloha, 2010). This upregulation contributes to tolerance, dependence, and withdrawal symptoms (anxiety, irritability, depressed mood, restlessness, poor concentration, hunger, and insomnia) when nicotine is not available (Jiloha, 2010).

Nicotine binds to cholinergic receptors in the midbrain tegmentum, striatum, nucleus accumbens, and ventral tegmental areas in addition to receptors on muscles, adrenal glands, and the heart. Receptor binding in the nigrostriatal and mesolimbic neurons causes dopamine release. When dopaminergic receptors are stimulated, a variety of neurotransmitters are discharged, stimulating the reward pathway. As with other drugs of abuse, dopaminergic action in the mesolimbic pathway is highly linked to addictive properties of nicotine (United States Department of Health and Human Services, 2010). Nicotine actions on the locus coeruleus affect arousal, vigilance, concentration, and stress. Similar to acetylcholine, nicotine improves learning and memory (Jihola, 2010).

In addition to affecting dopamine, acute nicotine administration affects serotonin neurotransmission and plays a role in modulating norepinephrine, glutamate, and gamma-aminobutyric acid (USDHHS, 2010, p. 127). These biologic responses to nicotine are consistent with improved mood, energy, concentration, and anxiety alleviation commonly reported by cigarette smokers. Additionally, constituents in tobacco smoke appear to inhibit monoamine oxidase, an enzyme that breaks down neurotransmitters, resulting in higher levels of dopamine, norepinephrine, and serotonin (USDHHS, 2010, p. 181). Many psychiatric disorders involve dysregulation of these specific neurotransmitters, which is thought to cause baseline mood instability, depression, anxiety, and symptoms of psychotic disorders (Stahl, 2013). For individuals experiencing dysregulation of neurotransmission, smoking cigarettes may, in some ways, mediate the symptoms of mental illness (USDHHS, 2010, p. 136-136). Smoking implications related to specific disorders will be discussed in greater detail in another section.

Genetics

Neuroreceptors and transmitters have not been the only biologic implications linked with smoking; genetic associations in schizophrenia and bipolar disorder complicate the picture. The location of alpha-7 nicotinic receptor subunit gene on chromosome 15 has been linked with both schizophrenia and bipolar disorder. This nicotinic receptor gene is associated with impaired sensory processing, auditory sensory-gating deficits, and weakened suppression of the auditory evoked P50 response (Leonard et al., 2001; Schroeder & Morris, 2009, p. 300). Auditory sensory gating is the process of filtering out unnecessary stimuli. P50 refers to a test measuring the person's ability to "gate", or filter out, redundant stimuli (Leonard et al., 2001, p. 565). Nicotine aids in normalizing this deficit in people with schizophrenia and bipolar disorder (deficit occurs only during mania). These abnormal responses in sensory perception are inherited in families with schizophrenia in an autosomal dominant manner (Leonard et al., 2001). Therefore, not only is nicotine highly addictive, genetic traits associated with some psychiatric disorders make it likely that nicotine will have an effect on psychiatric symptoms, which may be another factor in high smoking rates in this population.

Schizophrenia

Approximately 80-90% of individuals with schizophrenia smoke tobacco and commonly report heavy smoking, defined as greater than 1.5 packs per day (USDHHS, 2010, p. 135). Schizophrenia is thought to occur, in part, due to abnormalities in dopamine regulation causing positive symptoms of psychosis and cognitive symptoms

such as impaired information processing and difficulty focusing attention. Individuals with schizophrenia may also experience affective symptoms like tension, anxiousness, irritability, and depressed mood as well as negative symptoms including blunted affect, poor social rapport, social withdrawal, and anhedonia, or lack of pleasure (Stahl, 2013).

Symptom Alleviation

Because people with schizophrenia have abnormalities of dopamine regulation in reward centers of the brain, they may be more susceptible to the rewarding effects of nicotine (Stahl, 2013; USDHHS, 2010, p. 135-136). Additionally, nicotine may help alleviate the cognitive and affective symptoms of schizophrenia. Wing, Bacher, Sacco, and George (2011) conducted a cross-sectional study of current smokers with schizophrenia ($n = 38$), former smokers with schizophrenia ($n = 16$), and individuals with schizophrenia who had never smoked ($n = 12$) and compared them to controls ($n = 31$) in order to examine the relationship between neuropsychological performance and smoking status. Never-smokers with schizophrenia performed the poorest on measures of attention, processing speed, and inhibition, highlighting the association between cognitive function, smoking, and schizophrenia. Similarly, Morsano, Wing, Sacco, Arenovich, and George (2013) demonstrated a link between smoking and improved verbal memory outcomes in smokers with schizophrenia as compared to non-smokers with schizophrenia ($p < .05$). Interestingly, individuals with bipolar disorder and major depressive disorder did not differ from controls in neuropsychological function.

Medication Side Effects

Not only does schizophrenia cause symptoms that may be lessened by using tobacco, nicotine is thought to ease side effects of medications used to treat this population. Antipsychotics affect dopamine and other neuroreceptors, ultimately reducing positive symptoms such as hallucinations and delusions by blocking the release of dopamine. Blocking dopamine receptors can also result in side effects like extrapyramidal symptoms, poor cognition, and worsened negative affect (Stahl, 2013). Because nicotine intake causes dopamine release and prevents its breakdown, it may reduce problematic side effects of antipsychotics (Schroeder & Morris, 2009). Smoking may also reduce side effects (and medication efficacy) because it lowers serum levels of many psychotropic medications (Schroeder & Morris, 2009). For example, olanzapine and clozapine are both substrates of the enzyme CYP450 1A2. Constituents of tobacco smoke, known as Polycyclic Aromatic Hydrocarbons (PAHs), induce CYP450 1A2 (Nebert, Dalton, Okey, & Gonzalez, 2004) resulting in increased metabolism of drugs like clozapine and olanzapine; subsequently, serum levels and effectiveness of the drugs are reduced (Stahl, 2013).

Nicotine Dependence

Many studies report high levels of nicotine dependence in persons with schizophrenia, making quitting more difficult (Baker et al., 2007; Smith, Homish, Giovino, & Kozlowski, 2014; Tidey, Colby, & Xavier, 2014; Williams, Gandhi et al., 2011). For example, data from a study of smokers with psychotic disorders ($n = 298$) indicated high levels of nicotine dependence as evidenced by a mean score of 8.06 on the

Fagerstrom Test for Nicotine Dependence where a score of six or greater indicates a high level of nicotine dependence (Baker et al., 2007, p. 146). These results were compared to studies of the general population where means ranged from 3.0 to 4.3 (p. 144). According to research by Williams, Gandhi et al. (2011), smokers with schizophrenia ($n = 75$) smoked more cigarettes in a 24-hour period than control smokers ($n = 86$) and took an average of 2.8 more puffs per cigarette, resulting in a shorter interpuff ratio ($p = .001$). This more intense cigarette smoking promotes greater nicotine intake and subsequently, greater dependence (2011). Tidey et al. (2014) studied cigarette craving and nicotine withdrawal in smokers with and without schizophrenia during a 72-hour abstinence period. Those with schizophrenia ($n = 28$) reported more intense cigarette cravings and withdrawal symptoms as compared to smokers without schizophrenia ($n = 27$). Additionally, only one person with schizophrenia remained abstinent for greater than a 48-hour period as compared to 33% of control smokers ($p = .05$). Interestingly, the time frame between abstinence and resuming smoking was mediated by baseline depression and severity of withdrawal in the group with schizophrenia, indicating a relationship between negative affect, high nicotine dependence, and poorer cessation outcomes in schizophrenia (Tidey et al., 2014, p. 332).

Non-Psychotic Disorders

Although smoking, nicotine dependence, and withdrawal are highly associated with psychotic disorders like schizophrenia, in general, mental illness is correlated with greater withdrawal syndrome and dependence. Based on the National Epidemiologic

Survey on Alcohol and Related Conditions, Smith et al. (2014) determined that approximately 44% of nicotine withdrawal diagnoses were linked to mental illness. Smokers with mental illness in this study were less likely to be successful in quit attempts due to excessive nicotine dependence and withdrawal symptoms. Results from a population-based survey in Colorado ($n = 14,118$) indicated that, although individuals with mental illness were more likely to attempt quitting than those without mental illness (58.7% vs. 44.4%, $p < .05$), authors found lower quit rates and long-term abstinence in the psychiatric population. Additionally, people with anxious symptoms were less likely to succeed in quitting, as compared to other diagnoses (Morris, Burns, Waxmonsky, & Levinson, 2014).

Affective disorders and smoking are highly interrelated, which is based, in part, on the relationship between nicotine and mood, attention and concentration, pleasure, energy, anxiety, and stress reduction. The U.S. Surgeon General's 2010 report stated that the incidence of major depressive disorder is two to three times higher in smokers than non-smokers. This may be a bidirectional relationship, in that, although nicotine acutely increases serotonin levels, long-term nicotine administration leads to decreased overall serotonin levels. Hence, a person may have started smoking to alleviate baseline symptoms of depression or smoking cigarettes may have contributed to the development of depressive symptoms (USDHHS, 2010, p. 135, 169).

In a cross-sectional study of 134 outpatients with bipolar disorder, smokers were found to carry a greater symptom burden than nonsmokers based on the Rapid Psychiatric Interview Data scale. The symptoms included those of anxiety ($p = .0001$),

depression ($p = .0005$), and mania ($p = .0001$) (Saiyad & El-Mallakh, 2012). Dodd et al. (2010) reported similar findings in a prospective study of smokers ($n = 122$) and non-smokers ($n = 117$) with schizoaffective and bipolar disorder. Over the 24-month study period, daily smokers had worse overall scores in symptoms of depression ($p = .034$) and bipolar disorder ($p = .026$) and longer hospital stays ($p = .012$) as compared to non-smokers.

Withdrawal Symptoms

Nicotine withdrawal symptoms closely mimic psychiatric symptoms. Smith et al. found that withdrawal symptoms were not only substantially more likely to be diagnosed in mental illness, but also, the burden of withdrawal is likely to be more distressing to people with mental illnesses (2014). Furthermore, internalizing disorders, or those related to mood and anxiety, and psychotic disorders were more highly associated with withdrawal severity as compared to externalizing disorders only (antisocial personality disorder, substance use disorders). This similarity may be due to the fact that nicotine withdrawal often involves negative affect (Smith et al., 2014, p. 131). In another study of daily smokers ($n = 1,469$) with lifetime history of anhedonia and depressed mood, anhedonia predicted poorer odds of cessation ($OR = 1.31$, 95% CI [1.05, 1.62], $p = .02$). Therefore, individuals struggling with affect may be more likely to experience smoking relapse due to exacerbation of anhedonic symptoms related to nicotine withdrawal (Leventhal, Piper, Japuntich, Baker, & Cook, 2014).

Other Factors Associated with Tobacco Use

The etiology of smoking in mental illness is multifactorial and, although tobacco use is highly modulated by biological mechanisms, individuals continue smoking for psychological and social reasons as well. Difficulty holding consistent employment and lack of activity often leads to boredom in this population, which is commonly associated with smoking (Baker et al., 2007; Mann-Wrobel et al, 2011; Morris, Waxmonsky, May, Giese, & Martin, 2009). In a subset of a larger randomized controlled trial, Mann-Wrobel et al. (2011) examined smoking history, quit attempts, and confidence to quit in participants with schizophrenia ($n = 41$). Participants reported smoking in order to deal with negative affect and to cope with boredom. Similarly, in a study of 298 smokers with psychotic disorder, reducing stress and boredom was the most commonly reported reason for smoking (Baker et al., 2007).

A plethora of other factors impair cessation efforts in people with mental illness. For example, a qualitative study of 10 focus groups comprised of mental health consumers and clinicians revealed several barriers to smoking cessation, including boredom, the view of smoking as a social event, smoking as a coping mechanism for stress and symptom control, knowledge deficits, and lack of resources and support for smoking cessation (Morris, Waxmonsky, May, & Giese, 2009). Additionally, although most of the 41 participants who Mann-Wrobel et al. studied expressed interest in quitting prior to treatment (70.7%), the majority reported either little self-confidence (32.5%) or only moderate self-confidence (30%) in quitting (2011). Dixon et al. (2009) highlighted the relationship between greater smoking severity in mental illness and greater perceived

stress, poorer subjective quality of life, financial dissatisfaction, and discontentedness with leisure activities and social relationships ($n = 304$ smokers with severe mental illness). By understanding these associations, properly tailored interventions can be implemented to personalize smoking cessation measures for people with mental illness.

Smoking Cessation Interventions for People with Mental Illness

Strategies for treating tobacco dependence in people with mental illness are available. The following sections highlight the best evidence for cessation interventions, including Agency for Healthcare Research and Quality (AHRQ) guidelines, motivational interviewing techniques, mindfulness therapy, peer worker interventions, group interventions, nursing interventions, quit lines, and a review of pharmacotherapy.

Agency for Healthcare Research Quality (AHRQ) Guidelines

The Agency for Healthcare Research and Quality has compiled a comprehensive guideline to direct healthcare providers in treating tobacco use and nicotine dependence.

The 10 key recommendations are listed:

1. Tobacco dependence should be viewed as a chronic disease requiring multiple quit attempts and interventions to achieve sustained abstinence.
2. Clinicians and health systems should consistently identify and document tobacco use status and treat each user through means of the 5 A's, defined as *Ask* about smoking, *Advise* those who do smoke to quit, *Assess* willingness to quit, *Assist* patients who are willing to quit by helping them

to take action, and *Arrange* for follow up through further appointments or group treatment.

3. Clinicians should encourage each patient to use counseling and medication-based treatments.
4. Brief interventions are effective for tobacco dependence and should be provided as a minimum for each tobacco user.
5. Individual, group, and telephone counseling are effective and treatment intensity is highly related to effectiveness. Clinicians should offer both practical counseling and social support to patients willing to make a quit attempt.
6. Tobacco cessation medications should be offered and encouraged by clinicians, except when contraindicated, and combinations of medications should also be considered.
7. The combination of medication and counseling is more effective than either alone.
8. Telephone counseling is effective treatment for many smokers and is widely available.
9. If a person is unwilling to quit, clinicians should use motivational interventions.
10. Insurers and purchasers should ensure coverage of counseling and medications for smoking cessation (Fiore et al., 2008, p. 6-8).

This guideline presents substantial evidence that intensive interventions are more effective in tobacco cessation and are especially suitable for people who are highly nicotine dependence, such as those with psychiatric conditions. Higher intensity interventions are defined as greater than four sessions and greater than 10 minutes per session. Types of counseling that appear to be most effective include practical counseling using problem solving skills training and education, providing support and encouragement during direct contact with the clinician, and enhancing social support outside of the treatment setting (Fiore et al., 2008, p. 97).

The literature indicates that the combination of counseling and medication interventions is significantly more effective than either intervention alone. More than eight sessions plus medication (nicotine replacement, bupropion, varenicline) produced the highest rate of success (Fiore et al., 2008, p. 101).

As previously noted, smokers with mental illness are at an elevated risk for relapse due to psychiatric symptoms and high nicotine dependence. Because of this, specific caveats for mental illness have been delineated. Clinicians should frequently assess withdrawal and psychiatric symptoms during a quit attempt, as withdrawal has the potential to exacerbate symptoms. Additionally, clinicians must closely monitor psychoactive medication levels due to the alterations in metabolism caused by smoking/cessation. Both counseling and medication are recommended in treating tobacco dependence in psychiatric patients (Fiore et al., 2008, p. 146).

5 A's

Several resources advocate for use of the 5 A's as a beginning step in treating tobacco dependence both in the general population and in people with mental illness (Dixon et al., 2009; Fiore et al., 2008; Morris, Waxmonsky, May, Giese, & Martin, 2009). Previously defined, the 5 A's of smoking cessation are ask, advise, assess, assist, and arrange (Fiore et al., 2008). Dixon et al. (2009) examined this intervention in community mental health practice where the goal for physicians was to address the 5 A's at each patient visit. The research found no results after six months, but modest results in cessation and cigarette reduction after 12 months; however, the majority of physicians only implemented the first three A's of the five. Even so, results indicated a 5% abstinence rate compared to data from general healthcare in which the 3 A's produced abstinence rates of roughly 10%. Although this approach was moderately effective, patients with psychiatric comorbidities may need more intensive intervention (Dixon et al., 2009).

Motivational Interviewing

One goal of the 5 A's approach is assessing readiness or motivation for change. Motivational interviewing, originally developed for substance abuse treatment, is a "client-centered, directive, therapeutic style to enhance readiness for change by helping clients explore and resolve ambivalence" (Hettema, Steel, & Miller, 2005, p. 91). A systematic review of motivational interviewing effects on smoking cessation in the general population reported greater effectiveness as compared to other brief interventions (Lindson-Hawley, Thompson, & Begh, 2015). Shorter sessions were more effective than

longer sessions. Due to study designs and inconsistencies in reporting, results were difficult to generalize (Lindson-Hawley et al., 2015).

In the overall population, motivational interviewing appears to be more effective than no treatment, but few studies exist to support motivational interviewing as sole treatment of tobacco dependence in mental illness. Nevertheless, many programs use components of this treatment approach. Using these techniques with ambivalent clients before more intensive treatment is also recommended (Fiore et al., 2008).

Mindfulness

Mindfulness may be beneficial in treatment of patients with mental illness. Interventions that incorporate mindfulness generally include directing thoughts and feelings into the present moment and minimizing judgment and evaluation of these feelings and thoughts (Davis & Kurzban, 2012, p. 204). Goals of treatment include reduced symptom-associated distress and increased self-efficacy. This approach focuses on recovery principles such as self-determination and resilience, not only on symptom-based treatment (Davis & Kurzban, 2012). Due to the fact that many psychiatric patients struggle with negative affect and mood instability while attempting to quit smoking, mindfulness-based treatment may be helpful in addressing these issues.

Although there is a lack of suitable data to support mindfulness therapy as the sole treatment for tobacco use in mental illness, one randomized controlled trial supports use in the general population (Brewer et al., 2011). To determine effectiveness in smoking cessation, Brewer et al. compared mindfulness training to an alternative smoking cessation program in 88 adult smokers. Individuals who received mindfulness training

showed significant reduction in smoking at the 17-week follow up, comparatively ($p = .001$). This pilot trial signifies that more research should be done in the area of mindfulness therapy for tobacco use (Brewer et al., 2011).

Peer Interventions

According to several surveys of mental health consumers, peer support in smoking cessation has been very helpful or essential to treatment (Dickerson et al., 2011; Williams et al., 2010). The Substance Abuse and Mental Health Services Administration (2014a) and National Alliance on Mental Illness (2015) both advocate for the peer support model for mental health recovery. Ashton, Miller, Bowden, and Bertossa implemented a 10-week smoking cessation program for individuals with mental illness utilizing a mental health peer co-facilitator. This pilot study resulted in high motivation to quit and a 12-month abstinence rate of 21.3% ($n = 94$) for those who completed all 10 sessions (2010). In a literature review four peer-interventions for tobacco use treatment, McKay and Dickerson (2012) reported that the peer-worker interventions increased participants' level of confidence in quitting (McKay & Dickerson, 2012).

CHOICES (Consumers Helping Others Improve their Condition by Ending Smoking) is another consumer-driven intervention to help people with mental illness quit smoking. In this program, mental health consumers who have quit smoking are hired as consultants and advocates for other mental health clients. Brief peer-to-peer training sessions include motivational interviewing, education linking medical conditions to tobacco use, and expired carbon monoxide level. Level of motivation to quit was evaluated following peer-to-peer sessions and resulted in 40% of individuals reporting

motivation to quit in the next 30 days and 44% in the next six months ($n = 101$).

Motivation to quit was significantly higher than results from comparison studies (Williams, Dwyer et al., 2011).

Group Interventions

Individual and group interventions are both recommended for treatment of tobacco dependence in persons with mental illness. However, the literature indicates that group work may be effective and feasible in addition to providing a supportive environment for smoking abstinence (Ashton et al., 2010; Currie et al., 2008; Goldie, Mashura, Heah, Okoli, & Johnson, 2012; Kisley, Wise, Preston, Malmgren, & Shannon, 2003; Masuhara, Heah, & Okoli, 2013; Morris et al., 2011).

Ashton et al. (2010), Kisely, et al. (2003), and Morris et al. (2011) each studied a group format based on a program developed by SANE, a mental health advocacy organization in Australia (SANE Australia, 2014). All resulted in either significant tobacco use reduction, improved nicotine dependence scores and cotinine levels, and/or high motivation to quit. In a community mental health setting, Currie et al. reported quit rates of 16% to 19% ($n = 79$) following a group-based treatment developed by American Lung Association called “Freedom from Smoking” (2006). Lastly, a study of the group program “Butt-Out” ($n = 28$) was effective in reducing cigarette consumption by half (28%) and moderately effective in achieving abstinence (10.7%) in community mental health consumers (Goldie et al., 2012; Masuhara et al., 2013).

Nursing Interventions

Although nurses are well suited to provide a variety of smoking cessation interventions, research of tobacco cessation nursing interventions specific to mental health settings is limited. However, there is significant evidence supporting nursing interventions in a variety of other patient populations (Rice, Hartmann, Boyce, & Stead, 2013). In a systematic review of 49 randomized trials of nurse-delivered smoking cessation interventions, authors found that smoking cessation advice and/or counseling delivered by nurses was effective in increasing the likelihood of patients quitting (RR 1.29; 95% CI [1.2, 1.39]). The effect was weaker when nurses offered only brief interventions and when the intervention was provided by nurses whose primary role was not smoking cessation (Rice et al., 2013, p. 2).

Medications

Most of the interventions mentioned in this literature review have incorporated some form of pharmacotherapy. Guidelines recommend the use of medications in tobacco dependence treatment for all individuals (Fiore et al., 2008). Because people with mental illness report high levels of nicotine dependence and distressing withdrawal symptoms upon cessation, nicotine replacement may be even more imperative in this population (Morris, Waxmonsky, May, Giese, & Martin, 2009). Examples of nicotine replacement therapy (NRT) include gum, lozenge, nasal spray, and transdermal patch. Other medications that may be helpful in this population are bupropion and varenicline (Morris Waxmonsky, May, Giese, & Martin, 2009).

According to Morris, Waxmonsky, May, Giese, & Martin (2009), nicotine replacement has been associated with smoking cessation rates from 27-42% in people with schizophrenia. These medications have also been helpful in reducing negative mood states associated with withdrawal, which are particularly troublesome in individuals with mental illness (Williams & Hughes, 2003). A systematic review of 12 studies in the general population reported that NRT plus bupropion SR (norepinephrine/dopamine reuptake inhibitor) helped smokers quit approximately 80% more than placebo (Cahill, Stevens, Perera, & Lancaster, 2013). Varenicline, a partial agonist at nicotinic acetylcholine receptors, more than doubled chances of quitting and was 50% more effective than single NRT agent; however, combination NRT (patch and gum, etc.) was as effective as varenicline (Cahill et al., 2013). Another systematic review (five trials) indicated that cessation rates after six months were significantly better with bupropion versus placebo users when treating tobacco dependence in patients with schizophrenia ($N = 214$, RR 2.78, 95% CI [1.02, 7.58]) (Tsoi, Porwal, & Webster, 2013).

According to smoking cessation guidelines, clinicians should offer higher dosages of NRT to individuals who are highly nicotine dependent (Fiore et al., 2008). Combination medication therapies are recommended with evidence supporting long-term therapy with nicotine patch and nicotine lozenge or gum, nicotine patch plus nicotine inhaler, and nicotine patch plus bupropion SR (Fiore et al., 2008). Nicotine replacement therapies do not appear to affect the metabolism of psychiatric medications like cigarette smoking does and have a low risk of side effects. Varenicline should be used with caution due to possible risk of exacerbating psychiatric symptoms and bupropion is

contraindicated in patients with seizure disorders and in patients with history of bulimia or anorexia nervosa. It should be also used with caution in patients who have a history of manic symptoms (Fiore et al., 2008).

Barriers and Incentives to Treatment

Although evidence supports behavioral and pharmacologic interventions for tobacco cessation in mental illness, it is essential to understand barriers and incentives to treatment in both patients and clinicians. The following sections highlight patients' reported barriers and incentive for smoking cessation and several factors explaining why tobacco use has typically been lacking in the treatment of psychiatric patients.

Patient Barriers

Many factors associated with smoking in this population have already been outlined, such as high nicotine dependence, anxiety, affective and psychotic symptoms, burden of withdrawal symptoms, and the ability to cope with stress. Roberts and Bailey reported additional patient barriers to participation in lifestyle interventions, including poor motivation in general, decreased social interaction, and unstable mental condition. Lack of confidence to succeed also affects this particular population (2011).

Provider Barriers

Patient barriers to quitting are important to address; however, provider barriers to implementing cessation interventions may be even more important. One clear issue is mental health providers' personal smoking behaviors. Although statistics vary, general

practice nurses reportedly smoke at rates from 6.1% to 10.73% (Sarna et al., 2010; Smit, de Vries, & Hoving, 2013). Conversely, studies of mental health nurses report smoking rates ranging from 17.4% ($n = 167$) (Dickens, Stubbs, & Haw, 2004) to 21% ($n = 585$) (Robson, Haddad, Gray & Gournay, 2012). This is significant because providers' personal smoking behavior may be a barrier in initiating cessation interventions (Dickens et al., 2004; Johnson et al., 2009). For example, Johnson et al. surveyed community mental health providers ($n = 282$), of which, approximately 22% were current smokers. Those who had never smoked or were former smokers reported assessing patient smoking status more than current smokers, 71.9% and 56.1%, respectively (Johnson et al., 2009). Similarly, Dickens et al. (2004) reported that registered nurses (RNs) who smoked ($n = 29$) were significantly less likely to encourage psychiatric inpatients to stop smoking as compared to non-smoking RNs ($n = 131$), 59.3% and 91.4%, respectively ($p < .001$).

Other barriers also exist. Johnson et al. (2009) also found that providers ($n = 282$) more likely to offer smoking cessation interventions were those who had more confidence and more experience working in mental health. According to Himelhoch, Riddle, and Goldman (2014), only 26% of clinicians ($n = 95$) were confident in providing cessation interventions. The most significant barrier, however, was the clinicians' belief that their patients did not want to quit (77%). Although tobacco treatment has not been shown to interfere with mental health recovery or worsen psychiatric symptoms (Cavazos-Rehg et al., 2014; Fiore et al., 2008), some mental health nurses still hold the belief that smoking cessation will exacerbate psychiatric disorders (Connolly, Floyd, Forrest, & Marshall, 2013; Glover et al., 2014). Providers may also see tobacco use as a

minor problem compared to the patients' other psychiatric symptoms (Morris, Waxmonsky, May, & Giese, 2009; Schroeder & Morris, 2010).

Incentives to Treat

Despite these commonly held beliefs, the literature indicates that patients with mental illness are motivated to quit using tobacco, and although it may be more difficult, they can stop smoking (Schroeder & Morris, 2010). Patients have identified several reasons to quit smoking, for instance, a sample of 78 successful quitters with serious mental illness did so because of health reasons (73%), financial cost of cigarettes (71%), and advice from a doctor (54%) or other person (64%). Factors enabling them to quit were social support from family and friends as well as healthcare providers, use of NRT, and advice from friends who had quit (Dickerson et al., 2011). In a systematic review, Siru, Hulse, and Tait reported that people with mental illness are just as motivated to quit smoking as the general population (2009). In fact, according to research by Ashton, Rigby, and Galletly (2013), 87% of participants ($n = 1,043$) living with mental illness wanted to quit tobacco for health and financial reasons.

Furthermore, little evidence has been found to substantiate beliefs that tobacco cessation interferes with mental health recovery (Morris, Waxmonsky, May, Giese, & Martin, 2009). On the contrary, some studies report improvement in psychiatric symptoms upon cessation (Cavazos-Rehg et al., 2014; Taylor et al., 2014). For example, after analyzing longitudinal data from a large epidemiologic study, Cavazos-Rehg et al. (2014) found no data to suggest that smoking cessation increased risk of mood, anxiety, or substance use disorder, but that it actually reduced the likelihood of symptom

recurrence among smokers with a preexisting disorder (*OR* 0.6, 95% CI [0.4, 0.8], *p* = .05). Cole, Trigobof, Demler, and Opler (2010) reported that inpatients treated with clozapine or olanzapine (*n* = 26) who were required to stop smoking on admission had a small, but significant change in global assessment of functioning, but no other specific symptom exacerbations. Similarly, a small study of smokers with psychotic disorder (*n* = 298) indicated no deterioration of symptoms by those who achieved abstinence versus those who did not (Baker et al., 2006). Morris et al. (2011) also reported overall reduction in patients' depressive and psychotic symptoms as well as increased daily functioning after a community-based intervention (*n* = 83).

Relevance

Although individuals with mental illness smoke at a rate nearly two times that of the general population and die sooner, largely due to smoking related diseases (CDC, 2013), tobacco cessation treatment is being delivered in a suboptimal manner. Significant gaps in the literature highlight the need for increased provider awareness and evidence-based nursing interventions. Implementing a nurse-led smoking cessation program at the mental health center has the potential to deliver educational resources, reduce tobacco use, and improve clients' quality of life on a local level. It was anticipated that this project would also help the community mental health center to comply with objectives of Health People 2020 (USDPHHS, 2015) and AHRQ evidence-based tobacco cessation guidelines (Fiore et al., 2008).

CHAPTER 3

THEORETICAL UNDERPINNING

Introduction

Hildegard E. Peplau was an extremely influential force in nursing theory and practice. In the psychiatric nursing community, Peplau served as a mentor and as an advocate in the development of the role of clinical specialist in psychiatric nursing. A significant figure in nursing as a whole, she promoted the integration of psychosocial concepts into nursing practice, which are now considered central to patient care (American Nurses Association, 2014).

Theory of Interpersonal Relations

Peplau developed and refined the middle-range theory of interpersonal relations in nursing. Moran, Burson, and Conrad (2014) define a middle range theory as more limited in scope compared to grand theories and less concrete than microtheories (practice theories). A middle range theory focuses on understanding nursing-related phenomena and can be generalized to nursing practice (2014, p. 96). Peplau's theory is specific, testable, and applicable. The phenomena she addressed were relationship and language (Armstrong & Kelly, 1995, p. 41).

According to Peplau, nursing is an interpersonal process involving the human interaction between two or more individuals with common goals (Gonzalo, 2011).

Patients are defined as those who are sick or in need of health services and nurses are

individuals who respond to those health needs (Peplau, 1952, p. 5). The general premise of Peplau's theory was built on the concept of nursing as a significant interpersonal process and educative mechanism that works in conjunction with other health disciplines and human processes to make health possible for individuals (Peplau, 1952, p. 16). She viewed the interaction between nurse and patient as a better indicator of health outcome than the use of technical skill (p. 6). She also promoted the idea that the ability to recognize interpersonal difficulties and the nurses' proficiency in resolving relational problems determine the extent to which nursing will be effective. (p. 12).

Rationale for Theory Selection

Rationale for theory selection is based on Peplau's declaration that, through communication and respect for one another, nurses and patients share in the solution of problems (Peplau, 1952, p. 9). Communication in the nursing process, therapeutic relationship development, and patient education allow both nurse and patient to define goals and reach mutual understanding (Peplau, 1952, p. 97).

Peplau's theory is well established and widely used in psychiatric nursing practice (Forchuk & Park Dorsay, 1995). The Theory of Interpersonal Relations is relevant to all areas of nursing and is grounded in the assumption that when the nurse-patient relationship is therapeutic, open, and sincere, the patient can express him or herself freely, allowing clearer self-understanding and eventual goal attainment (Peplau, 1992, p. 187, 259).

Nurse-Patient Relationship

The purpose of the nurse-patient relationship is to “promote experiences leading to health by supporting the individual’s natural tendency toward growth and personality development” (Stockmann, 2005, p. 912). The nurse-patient relationship has a starting point, proceeds through definable phases, and has an ending point (Peplau, 1992, p. 14). Three phases within this relationship are orientation, exploitation, and resolution (Peplau, 1952).

Orientation and Identification. The orientation phase consists of building the foundation for the nurse-patient relationship. These individuals get acquainted with one another and begin developing trust and understanding. The nurse then makes an assessment of patient needs and interests as the patient describes problems. Using this information, the nurse is able to make sense of the problems and provide clarity as issues are discussed in an open, interactive manner. Using reflective questioning, the nurse helps the patient better understand the nature of the problem (Peplau, 1992, p. 14). This interaction is similar to communication styles used in motivational interviewing. The nurse must understand that he or she does not have the capacity to change patients’ behavior, but does have control over the signals and communications sent to patients. This communication has the potential to evoke behavioral change from within the patient (Peplau, 1992, p. 14).

Exploitation. The nurse symbolizes a way of meeting needs, so after identification with the nurse, the patient can begin to take full advantage of the services offered

(Peplau, 1952, p. 41). In this way, the exploitation phase is also considered the working phase. During this phase the patient becomes integral in the healing process through use of professional nursing assistance to problem solve (Peplau, 1952). This phase can be likened to implementation of nursing interventions.

Resolution. Once the patient has met his or her goals, the nurse-patient relationship comes to an end. Both the patient and nurse will have grown because of the interpersonal process and the patient will no longer be dependent on the nurse. Evaluation of goals occurs in the termination phase (Peplau, 1952, p. 42).

Nursing Roles

Peplau describes nurses in the context of many different roles. Initially, the nurse plays the role of the stranger, but soon becomes teacher, resource person, and counselor. In these roles, the nurse can educate the patient and provide specific information to promote understanding of problems and circumstances. Peplau also defines the nurse as a surrogate, or advocate for the patient, and a leader. Additional roles might include technical expert, consultant, health teacher, tutor, socializing agent, safety agent, environmental manager, mediator, administrator, recorder, and researcher. By acting out these diverse roles, nursing makes health possible for individuals and groups (Current Nursing, 2012).

Theory Application

The Theory of Interpersonal Relations (Peplau, 1952) can be readily applied to tobacco cessation interventions for clients with mental illness. Assessment of smoking behaviors, personal barriers and incentive to quit, and implementation of a group intervention guided by theoretical understanding of the nurse-patient relationship, phases of interaction, and nursing roles will allow for mutual goal setting and attainment regarding smoking cessation efforts.

CHAPTER 4

METHODS

Introduction

The purpose of this scholarly project pilot intervention was to determine the feasibility of implementing a nurse-driven eight-week evidence-based cessation intervention at a community mental health center. Objectives were to improve participants' personal actions to eliminate smoking and reduce cigarette consumption. This chapter includes a discussion of the ethical considerations, sample, intervention, data collection, and analysis used in this project.

Ethical Considerations

Ethical considerations, including confidentiality and protection of human subjects in research, ensured wellbeing of participants throughout this project. Permission for the intervention was obtained from the nursing supervisor at the mental health center. Participant informed consent was obtained prior to program initiation. Participants were instructed that they may discontinue involvement in this intervention at any time without penalty and advised that, should any adverse events or symptom exacerbation occur as a result of this intervention, the participant would be referred directly to his or her mental health provider. A consent form was drafted and the author gained approval for the project from the Institutional Review Board at Montana State University on July 27, 2015 (see Appendices B, C, and D for documents related to ethical considerations).

Health information was kept confidential through locked files, password protected computer, and coded data. Participants were made aware of confidentiality issues at the initial meeting where they also signed the informed consent.

Setting

The mental health center is a community clinic in a city in a rural/frontier state. In general, 2,000 to 2,500 adult clients are served at the facility, many diagnosed with serious mental illnesses (S. Malloy, personal communication, February 7, 2015). Due to the inability to track smoking behaviors at the time of the project, the number of current smokers was unknown, but thought to be extensive, based on provider report (S. Darr, personal communication, March 24, 2015). S. Frye recently surveyed 28 of the mental health center's clients; 53% of the surveyed clients felt more health education would be beneficial to their care (personal communication, April, 2015). Although these results were not directly related to smoking, they highlight a need for increased health resources at this mental health center. Additionally, the mental health center provides medication management, but no behavioral interventions for clients who want to quit smoking.

Sample

A convenience sample of clients was recruited through initial intake with therapists and provider referral based on the clients' willingness to attend groups and pursue smoking cessation. No clients were excluded if they were willing to participate. The author personally invited potential participants through telephone contact. The

recruitment timeline was from August 1 to September 9, 2015. The group size was to be kept between five and 10 participants based on SANE recommendations (2014). Initially, eight of the referred clients followed through with the preliminary interview and informed consent process. Five clients presented to the first group. Four clients presented to the second and third groups. Three clients continued attending the group throughout completion. This number was significantly less than hoped for, but was anticipated based on the literature (Currie et al., 2008; Department of Veterans Affairs, 2006; Goldie et al., 2012; Kisley et al., 2003; Mashura et al., 2013).

Intervention

The SANE Smoke Free program has been researched for effectiveness in reducing cigarette consumption and enhancing motivation to quit (Ashton et al, 2010; Baker et al., 2006; Kisely et al., 2003; Morris et al., 2011). Development of the Smoke Free program was based on an extensive literature review and created collaboratively by mental health professionals and consumers to specifically target smokers with mental illness (SANE Australia, 2014).

The program was chosen based on the following factors drawn from AHRQ clinical practice guidelines and various aspects of the literature:

- Individuals with mental illness are often more nicotine dependent and are more likely to experience problematic/distressing withdrawal (Baker et al., 2007; Colby & Xavier, 2014; Leventhal et al., 2014; Smith et al., 2014; Tidey et al., 2014; Williams, Gandhi, Lu et al., 2011).

- Negative mood and affect are associated with smoking relapse and difficulty quitting (Baker et al., 2007; Leventhal et al., 2014; Mann-Wrobel et al., 2001; Tidey et al., 2014).
- Group interventions improve support for people with mental illnesses trying to quit smoking (Ashton et al., 2010; Currie et al., 2008; Goldie et al., 2012; Masuhara et al., 2013; Morris et al., 2011).
- Medications should be used in conjunction with behavioral interventions to improve outcomes and ease withdrawal in persons with mental illness (Fiore et al., 2008).
- Although tobacco users with mental illness smoke at a higher rate than the general population, they want to, and are able to quit (Ashton, Rigby, & Galletly, 2013; Dickerson et al., 2011; Schroeder & Morris, 2010; Siru, Hulse, & Tait, 2009).
- Smoking cessation may affect psychotropic medication metabolism and/or mimic psychiatric symptoms; patients should be closely monitored (Fiore et al., 2008).

In addition to information in the literature, nursing theory also guided the intervention and tool selection. The importance of the nurse-patient relationship in helping clients set and achieve health goals is foundational. Peplau stated, “It is likely that the nursing process is educative and therapeutic when nurse and patient can come to know and to respect each other as persons who are alike, and yet, different, as persons who share in the solution of problems” (Peplau, 1952, p. 9).

As previously stated, lack of confidence to succeed is a significant barrier to smoking cessation in persons with mental illness. Peplau's theory addresses this barrier, indicating that identification with the nurse leads to reduced anxiety and frustrations and increases client self-efficacy (1952, p. 93). The nurse's role as counselor, teacher, and resource person was a significant aspect of project implementation.

Due to the mental health center's preference, a group format was used with the intent of increasing the support system for cessation. The sessions were 60 minutes in duration. Each week, in addition to allowing time for discussion and support, the following subjects were presented:

Week 1. Reasons to smoke and reasons to quit

Week 2. Working with the positives

Week 3. How smoking affects your body

Week 4. Being empowered

Week 5. Dealing with stress and strong negative feelings/helping relationships

Week 6. Fit and well

Week 7. Planning for high-risk situations

Week 8. Celebrating the journey

Throughout the course of the group, the author had contact with mental health providers, advocating for clients in regard to withdrawal symptoms and psychiatric symptom assessment. Democratic leadership, initiated through honest, non-judgmental communication and acceptance, encouraged participation and allowed members to be active in their individual nursing plans (Peplau, 1952, p. 49). The author assisted

participants in determining personal goals for smoking cessation. An intention of the intervention was to help the patient to move beyond a feeling of powerlessness to acceptance through development of the nurse-patient relationship.

Intervention Preparation

In order to develop a level of confidence with smoking cessation treatment in clients with mental illness, the author prepared by studying Rx for Change-Psychiatry curriculum for approximately two hours in addition to time spent researching the selected intervention (University of California, San Francisco, 2015). Rx for Change-Psychiatry was developed specifically for psychiatry residents and psychiatric advanced practice nursing students and has demonstrated improvement in students' knowledge, attitude, counseling behaviors, and confidence in implementing smoking cessation interventions for persons with psychiatric comorbidities (Prochaska et al., 2008).

Polit & Beck defined common pitfalls in intervention research (2012, p. 635).

Table 1 highlights some anticipated challenges and steps taken to address these.

Table 1. Planned Action to Address Recruitment and Retention Rates

Challenge	Planned Action
Clients do not want to participate in intervention due to lack of trust or inadequate time	• Personalize invitation through face to face conversation • Schedule intervention at convenient time for majority of members • Fully explain intervention prior to initiation
Poor attendance/dropout	• Provide incentive at weekly meetings such as healthy snacks • Determine the participant's available meeting time prior to intervention initiation • Reduce boredom by providing interactive activities during meetings • Keep sessions 60-90 minutes with a short break • Promote use of client's personal support system • Provide reminders to clients before each session via telephone call

Instruments and Procedures

The effectiveness of nursing depends on how well nurses can recognize their patients' problems (Peplau, 1952). Therefore, prior to beginning group intervention, the author conducted a thorough, individualized client assessment. The specific nursing assessment included: (a) demographic information; (b) smoking history; (c) prior quit attempts/withdrawal symptoms; (d) age at smoking onset; (e) smokers in household; (f) support system; (g) current cigarettes per day; (h) physical and mental health history; (i) current medications; (j) allergies; and (k) psychiatric/primary care provider.

Self-Report Cigarettes per Day and Quit Attempts

Clients reported cigarette per day use at weekly meetings and once at four weeks post-intervention. Peplau highlighted the importance of respect between nurse and patient, both sharing in the solution to problems (1952). Allowing participants the autonomy of self-disclosing cigarette use stimulated conversation and fostered trust between the author and participants.

Because the time frame of a scholarly project does not permit collection of substantial data points to achieve statistical significance (White & Zaccagnini, 2014), self-reported cigarettes per day was not sufficient to determine change in motivation or behavior. This limitation was addressed by also assessing participants' smoking cessation behaviors, measured by the Smoking Cessation Behavior scale.

Nursing Outcomes Classification: Smoking Cessation Behaviors

The Nursing Outcomes Classification (NOC) Smoking Cessation Behavior scale is defined as "personal actions to eliminate tobacco use" (Moorhead, Johnson, Maas, & Swanson, 2013, p. 513). Each outcome indicator measures the frequency of positive steps taken toward smoking cessation. Higher numbers indicate more frequent actions taken to eliminate tobacco use, with 145 being the highest score (Moorhead et al., 2013, p. 513-514). See Appendix E for outcomes table used to record data.

Peplau's Theory of Interpersonal Relations highlights the importance of the nurse-patient relationship, verbal communication involved in the development of this relationship, and common goal setting between the nurse and the client (Peplau, 1952).

Therefore, the nurse and client completed the scale in a collaborative manner during the assessment interview and at program completion.

Fagerström Test for Cigarette Dependence (FTCD)

Because mental illness has been associated with higher nicotine dependence (Baker et al., 2007; Smith et al., 2014; Tidey, Colby, & Xavier, 2014; Williams, Gandhi et al., 2011), the Fagerström Test for Cigarette Dependence (formerly Fagerström Test for Nicotine Dependence) was conducted prior to starting the intervention and immediately following the last session (see Appendix F). Research suggests that this tool has high internal consistency ($\alpha = 0.74$) and test-retest reliability 0.65 ($n = 46$) in smokers with schizophrenia (Weinberger et al., 2007). The author also used this information to understand withdrawal symptoms and to better inform her nursing role as patient advocate and patient educator (Peplau, 1952). K. O. Fagerström granted permission for use of this tool (personal communication, April 26, 2015).

Client Satisfaction Questionnaire-8 (CSQ-8)

The Client Satisfaction Questionnaire-8 was completed by clients immediately post intervention (see Appendix G). The CSQ-8 is a brief questionnaire designed for a variety of health care settings, but initial tests were conducted in mental health settings. Validity and reliability have been tested and results indicated good psychometric properties as evidenced by Cronbach's alpha of 0.92-0.93. Predictive validity was demonstrated by the presence of higher satisfaction of mental health program completers versus non-completers in a sample of 281 mental health clients (Attkisson, 2012).

Analysis

Two research questions were used to guide this intervention:

1. Will a nurse-led smoking cessation group intervention increase personal actions to eliminate smoking in individuals with mental illness as evidenced by NOC scores?
2. Will the nurse-led smoking cessation group have an impact on nicotine dependence and cigarettes smoked per day?

Because of the small sample size obtained for this pilot project, no inferences can be made from data through statistical analysis. Data is displayed in the form of graphs and interpreted cautiously.

CHAPTER 5

OUTCOMES

Summary of Findings

The eight-week group intervention commenced on September 10, 2015 and ran weekly through October 28, 2015. The initial interviews took place with eight individuals, ages 20-62 years old (five female, three male). Diagnoses of the initial interview group ranged from schizophrenia, major depressive disorder with anxious features, and bipolar disorder, to borderline personality disorder, anorexia nervosa, and attention deficit disorder. Five clients came to the first group, ages 20-62 (two female, three male), with one client dropping out after the first group and another dropping out after the third. At program completion, three clients remained, all male, ages 55-62. Diagnoses of the final sample varied, including bipolar affective disorder, post-traumatic stress disorder, and schizophrenia.

Nursing Outcomes Classification and
Fagerström Test for Cigarette Dependence

Both Nursing Outcomes Classification of smoking cessation behaviors and cigarette dependence (FTCD) were measured pre and post intervention. Results of the three participants varied, but each showed improved consistency in behaviors related to smoking cessation. Cigarette dependence also diminished in two out of three participants after the intervention was complete. Refer to Figures 1, 2, and 3 for a visual representation.

Figure 1. Nursing Outcomes Classification: Smoking cessation behaviors. This figure illustrates smoking cessation behavior self-reported scores before and after the intervention. ID = Client number.

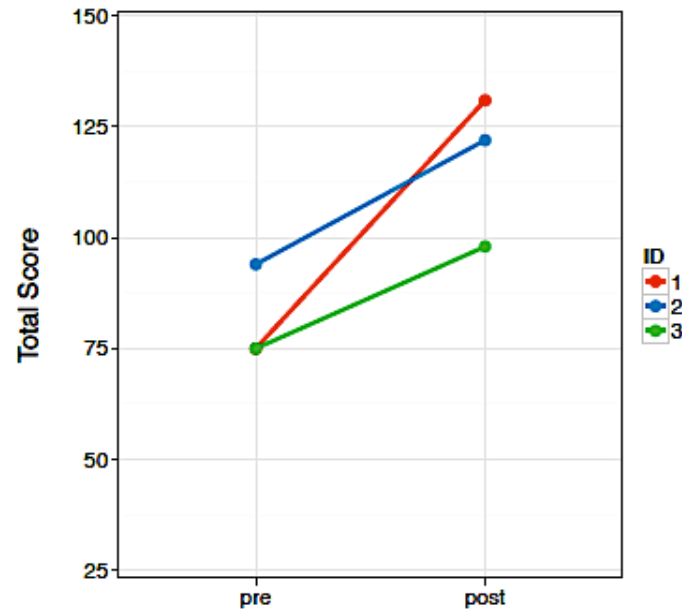


Figure 2. Fagerström Test for Cigarette Dependence: Pre and post-intervention scores. Scores above six indicate high cigarette dependence. Clients 1, 2, and 3, began the intervention with scores above six. Clients 1 and 2 ended the intervention with a low level of cigarette dependence.

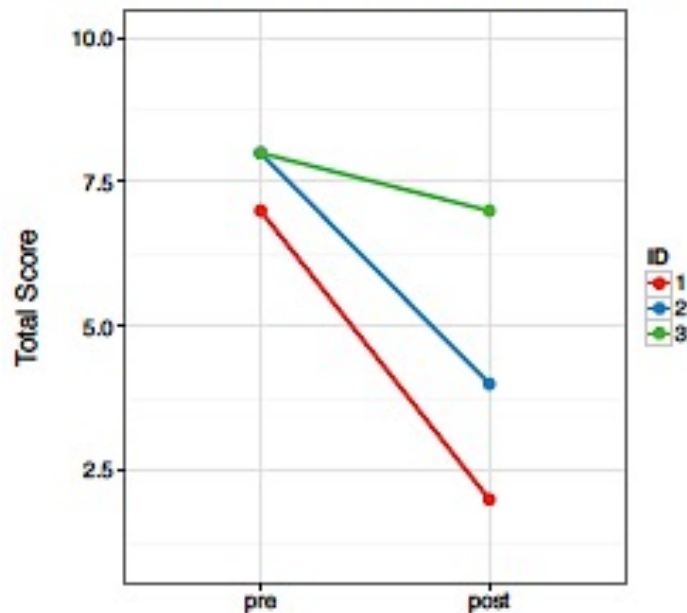
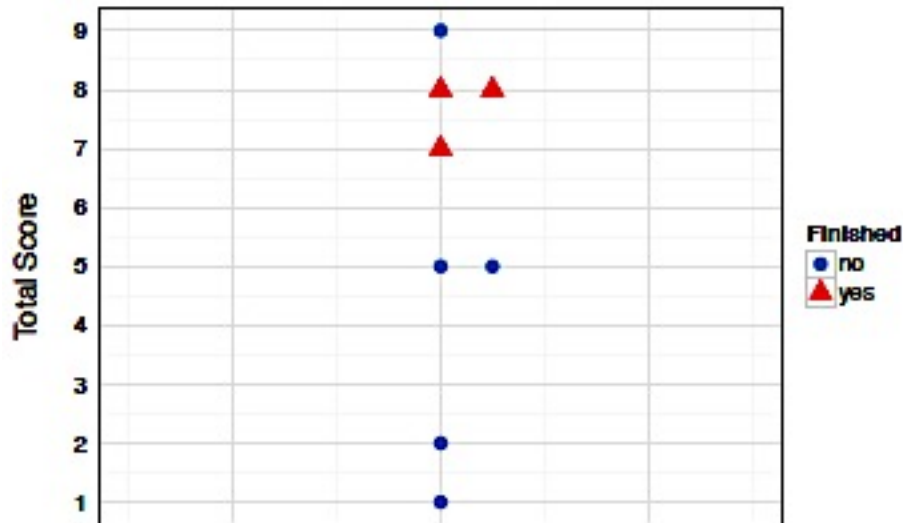


Figure 3. Fagerström Test for Cigarette Dependence: Pre-intervention scores. Clients who finished the 8-week smoking cessation intervention had scores above six indicating high cigarette dependence.



Cigarettes Per Day

Self-reported cigarette use was recorded at each meeting as well as four weeks post intervention. Results indicated that Client 2 consistently reduced cigarette consumption throughout the intervention, whereas both of the others had variable change in cigarette per day use during the eight-week period. At four weeks post-intervention, Client 1 remained smoking one to two cigarettes per day. The client also stated that he had gone several 24-hour periods with no cigarettes at all. Client 2 was still smoking 10 cigarettes per day and Client 3 had reduced cigarette use from 30 cigarettes per day at week eight to 18 cigarettes per day at the four-week follow up. Figures 4 and 5 represent cigarettes per day for all data collection points.

Figure 4. Cigarettes per day: Weeks one through eight. Interrupted lines indicate no data due to unattended group.

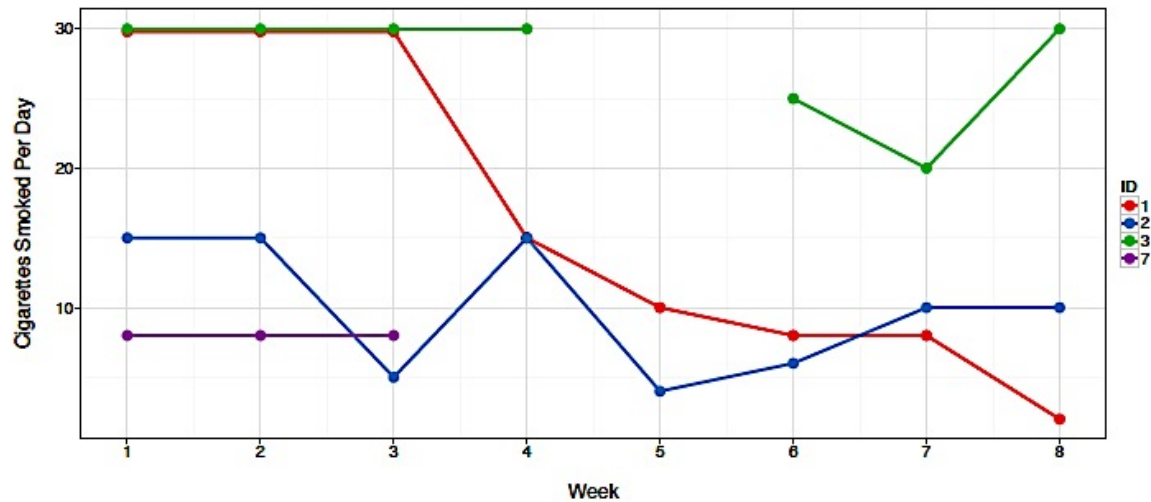
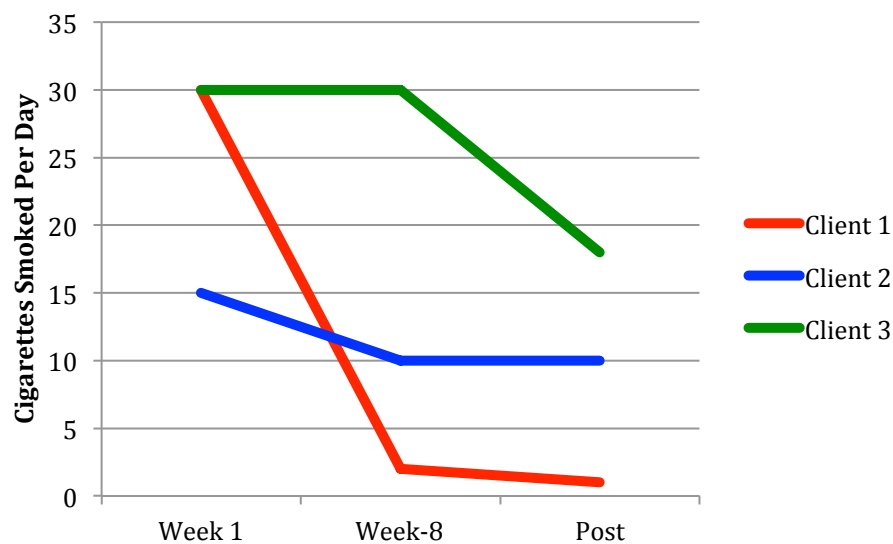


Figure 5. Cigarettes per day reported at week 1, week 8, and 4 weeks post intervention.



Client Satisfaction Scores

Clients completed a satisfaction survey during the last group. The lowest total score possible is eight and highest possible is 32. Scores in this sample ranged from 20-

32 indicating moderate to high level of satisfaction with the intervention. See Figures 6 and 7 for detailed client satisfaction scores.

Figure 6. Client Satisfaction Questionnaire-8: Individual questions.

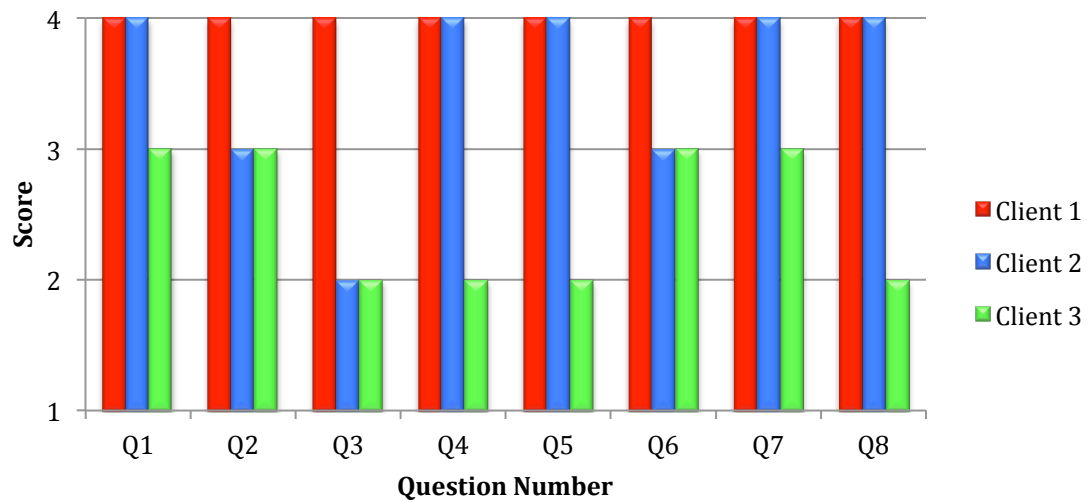
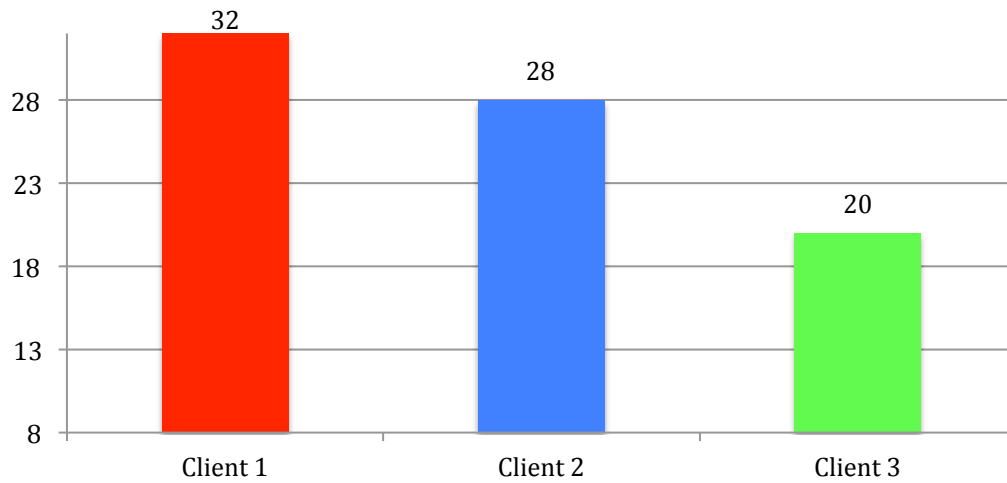


Figure 7. Client Satisfaction Questionnaire-8: Total scores.



Nicotine Replacement Use

Each of the participants used a form of nicotine replacement (21 mg nicotine patch, 4 mg lozenge) at some point during the group process, as recommended by a prescriber. No adverse events occurred as a result of using this prescription medication. In fact, during times of cigarette reduction, clients reported no unmanageable physical withdrawal symptoms due to the use of nicotine replacement. Participants denied intolerable side effects of nicotine replacement.

CHAPTER 5

DISCUSSION AND SUMMARY

Discussion of Outcomes

Several important outcomes resulted from this project. The following sections highlight information regarding the dropout rate, implications of smoking cessation behaviors, cigarette dependence, and cigarettes smoked per day, as well as how these findings relate to current literature. This section also reviews financial aspects related to the feasibility of implementing this program within the chosen setting. Lastly, the author discusses limitations of the project and steps for improvement, should another project be conducted or a smoking cessation program be implemented as part of regular treatment within the mental health center.

Dropout Rate

Three individuals completed the majority of this eight-week smoking cessation group with Client 3 missing the group during week 5. Within the mental health center, no-show rates for standard appointments are fairly high. In the last quarter of 2014, the rate of missed medication appointments ranged from 30-40% for all providers (S. Giffin, personal communication, February 2015). Dropout was anticipated based on overall no-show rates for mental health center appointments and on information given in the SANE Smoke Free program guide (SANE, 2009). Significant dropout in smoking cessation programs also appears to be a consistent finding in the literature. According to one study

using the SANE Smoke Free group intervention, of 38 participants, eight dropped out during the waiting period and another 11 during the intervention (Kisley et al., 2003). Additionally, in another community mental health group intervention, Currie et al. reported that only approximately 60% of clients attended more than half of the group sessions (2008). During an outpatient community mental health study, Goldie et al. (2012) reported that approximately 40% of outpatient clients had two or fewer contacts with the program prior to leaving and Mashura et al. (2013) reported a 67% completion rate.

Psychosocial stressors, transportation issues, and scheduling conflicts were reported as reasons for never attending the group or dropping out. One client abruptly left the first group session after taking offense to a statement made by the author, who was leading the group. This was most likely a miscommunication, but was never clarified due to the client's unwillingness to stay and resolve the conflict. Since this was such a small sample size, dropout results cannot be generalized to the entire mental health center, but it appears likely that the dropout rate experienced in this project was similar to overall rates in larger studies of comparable populations and to appointment no-show rates at the mental health center.

Nursing Outcomes Classification

The Nursing Outcomes Classification measurement consisted of 29 indicators addressing smoking cessation behaviors. Unfortunately, the author could not find any studies using the outcomes for statistical comparison. Despite this, the project

intervention appears to have improved consistency of smoking cessation behaviors as indicated by 30%-75% increases in scores after the eight-week intervention.

Although some outcomes were consistent among all three participants, there was clear difficulty with obtaining the NOC results because of the complexity of the scale and time to administer it. Additionally, one participant, in particular, was somewhat unreliable in other areas of measurement using self-report, so it is unknown if inconsistencies in smoking cessation behaviors outcomes were also unreliable. Due to these inconsistencies, self-reported scores could be seen as a limitation, but because the scores were self-reported, one might also surmise that the participants themselves felt the impact of positive behavior changes. For example, two participants reported increases in the outcome, “Expresses belief in ability to stop smoking”. Improving self-efficacy, although not an explicit measurement in this project, is important for clients quitting tobacco, as the literature shows that low-self efficacy is a major barrier to smoking cessation in many individuals with mental illness (Mann-Wrobel et al., 2011; Morris, Waxmonsky, May, Giese, & Martin, 2009). Improving self-efficacy to quit and increasing frequency of smoking cessation behaviors may be a more important measure than actual cigarette elimination during this short, eight-week intervention.

Fagerström Test for Cigarette Dependence

Again, due to the small sample, cigarette dependence cannot be generalized to the larger population of the mental health center. However, literature does indicate that smokers with mental illness generally have high rates of nicotine dependence (Morris, Waxmonsky, May, Giese, & Martin, 2009). Scores greater than six on the FTCD indicate

a high level of nicotine dependence (Baker et al., 2007). Out of the eight participants interviewed at baseline, half had scores below six. Interestingly, all of the original participants who either left the intervention or who never attended had the lowest cigarette dependence scores of the sample, leaving three out of four of the highest scoring individuals remaining in the intervention. All three participants who finished the group showed reduced cigarette dependence after the intervention, with only Client 3 still scoring over six. Results can probably be attributed to variations in nicotine replacement use, as Client 1 was the only participant to use NRT consistently.

Cigarettes Per Day

Although a self-reported cigarette per day count is not an entirely reliable measure of cigarette use, it has been used in multiple studies (Ashton et al., 2010; Baker et al., 2006; Morris et al., 2011). Client 3 smoked consistently throughout the group with little variation and Client 1 gradually decreased cigarette use in the last four weeks of the group. It was more difficult to accurately determine Client 2's cigarette use due to the fact that the client smoked loose, rolled tobacco rather than manufactured cigarettes. Instead of trying to equate the amount of loose tobacco smoked with manufactured cigarettes, face value of rolled cigarettes was measured. Ultimately, this individual probably smoked more tobacco at baseline than it appears, but it was impossible to determine this in any standardized way.

Each participant used nicotine replacement medication at some point in the intervention. Client 1 chose to begin by reducing cigarette use and eventually started using a 21mg nicotine patch from the sixth to the eighth week. This client was still using

the patch four weeks after the intervention. Client 2 began the intervention using 4mg nicotine lozenges inconsistently and switched to the 21mg patch in the seventh week. At follow up, Client 2 reported that he had stopped using the patch, but expressed interest in continuing medication in the future. Client 3 began using the patch in the fifth week, but decided to discontinue use after the seventh week and was not using NRT at follow up. Interestingly, cigarette per day use in all three participants appeared to correlate with use of the nicotine patch during the group, but this association was not statistically measured.

Client Satisfaction

The Client Satisfaction Questionnaire-8 was used to measure satisfaction with the group intervention. Clients 1 and 2 reported high satisfaction and Client 3 reported moderate to low satisfaction on most indicators. Question 7 asks, “In an overall, general sense, how satisfied are you with the service you received?” (Attkisson, 2012), to which two clients reported 4-very satisfied and one reported 3-mostly satisfied. In terms of client satisfaction, the group intervention appears to be feasible and moderately helpful to these clients. Client 3 offered suggestions for future groups: 1) offer a group greater than eight weeks, 2) provide more structured activities in the form of homework at each session, and 3) get more participants engaging in the group to build supportive relationships.

Financial Implications

According to Montana Medicaid, providers may bill for intermediate counseling sessions lasting three to ten minutes or intensive counseling sessions lasting greater than

ten minutes (Montana Department of Health and Human Services, 2014). The Medicaid list of approved provider types eligible to deliver tobacco cessation services includes psychologists, nurse practitioners, physician assistants, doctors, licensed clinical social workers, licensed professional counselors, and chemical dependency counselors. According to Medicare, tobacco cessation counseling is part of preventative services, which covers up to eight face-to-face sessions during a 12-month period. Only Medicare recognized providers are allowed to bill for counseling (MT DPHHS, 2014). Unfortunately, nurses are not eligible to bill for these group sessions under either Medicare or Medicaid.

Prior to the intervention starting, the therapy team and some potential participants had questions regarding cost of the intervention. Because this particular intervention was conducted as part of an academic project, the author did not bill for group sessions, so the group was free to all clients involved. However, if the mental health center chooses to use this program in the future, financial implications must be considered.

If a nurse employed by the mental health center is leading the group, approximately two hours per week will be spent preparing and conducting the group, which amounts to approximately \$42 per week, or \$336 per eight-week program (S. Blair, personal communication on November 7, 2015).

The cost of the project as whole without group leader's salary includes cost for use of the intervention and the CSQ-8, cost of snacks each week, and cost of printed material or other materials provided. See Table 2 for a financial breakdown. Unless an alternate plan is constructed, clients would be required to pay out of pocket or the mental

health center would have to absorb the cost of the program. Ideas for future programs will be discussed in a later section.

Table 2. Financial Summary of Project Implementation. Smoke Free Kit and CSQ-8 are one-time costs and not included in the total. All other items indicate approximate cost.

Item	Cost (dollars)
<i>SANE Smoke Free Kit</i>	<i>\$45.00</i>
<i>CSQ-8</i>	<i>\$25.00</i>
Weekly Snacks	\$80.00
Printed materials & other	\$25.00
Nursing group leader salary	\$336.00
Total	\$441.00

Strengths of the Project

Although this was a small pilot intervention, it had several advantages. First, the project applied appropriate tools for implementation and measurement based on the selected setting. The SANE Smoke Free program has been used in multiple community mental health studies, indicating appropriateness for this project (Ashton et al, 2010; Baker et al., 2006; Kisely et al., 2003; Morris et al., 2011). The program was relatively straightforward with some room for interpretation and flexibility. Additionally, the Fagerström Test for Cigarette Dependence is the recommend form of testing cigarette dependence (Fiore et al., 2008) because of validity and reliability and ease of administration. Finally, the Nursing Outcomes Classification is a standardized process of

evaluating nursing-sensitive patient outcomes and is considered one of the languages recognized by the American Nurses Association (University of Iowa, n.d.). These outcomes are being taught to baccalaureate nurses in an effort to measure the effectiveness of nursing care, advance theory development, elucidate nursing knowledge, and highlight nurses' contribution to patients, families, and communities. By using standardized language, nursing outcomes data can be collected and synthesized in a more meaningful way (Moorhead, Johnson, Maas, & Swanson, 2013, p. 2).

Second, a nurse-led smoking cessation group in the mental health center has potential to improve patient outcomes through education. During implementation of the group, clients had many questions regarding the effects of smoking on brain chemistry, symptoms of mental illness, effects on physical health, and the pathophysiology behind disease progression. As a nurse, the author was well prepared to answer these questions and to provide information on nicotine replacement use and side effects. The author's knowledge of physiology and confidence to deliver patient education also helped to build trust and foster the therapeutic relationship.

Third, because of the small group size, participants had ample time each week to discuss barriers and incentives to smoking cessation, brainstorm coping skills, and provide input to one another. Although the group was smaller than intended, limiting statistical analysis and generalizability, it allowed the author to connect with each participant and develop the nurse-patient relationship (Peplau, 1952). Peplau writes that the interpersonal relationship allows for goal attainment and greater self-understanding of both patient and nurse (1952). The author, a never smoker, used this opportunity to

reflect on personal biases and develop greater empathic understanding of group members as they provided personal insight into the process of smoking cessation. Although not measured, this experience was exceedingly beneficial for the author's personal growth as a future doctor of nursing practice.

Lastly, this project allowed the author to introduce a smoking cessation program into the mental health center and engage providers, therapists, and nurses in recognizing the importance of addressing tobacco use in clients with mental illness. Conducting this project in the mental health center sparked multiple conversations about tobacco use in individuals with mental illness and how to overcome barriers to treatment in this community mental health setting.

Limitations

The majority of limitations were related to the small sample size of the pilot project. The author had difficulty recruiting for the intervention in a setting where this smoking cessation program was the first of its kind. The small sample size made data analysis difficult and, subsequently, the author was unable to draw any concrete conclusions or generalize results to the larger population. The short time period set aside for recruitment was a barrier to higher attendance. Additionally, future participants may have been less likely to join the group because of the paperwork required for the academic project.

The Nursing Outcomes Classification scale was challenging to administer because several clients had difficulty understanding the outcomes. The author was then required

to provide an explanation, weakening standardization of the data collection process.

Additionally, the author acted as both data collector and group leader, possibly leading to bias in results. Nonetheless, sacrificing rigor of methods may have allowed the author to further develop relationships.

Future Directions

Given the relatively short length of the intervention in relation to the complexity of the issue, each of these clients made significant progress toward achieving their goal of quitting tobacco. In the future, persons attempting a smoking cessation intervention in this setting might consider extending the program to greater than eight weeks to give clients full opportunity to quit smoking and maintain abstinence while still receiving support from the group. Additionally, expanded marketing to clients of the mental health center as well as those who frequently visit the peer run drop in center (who may not be clients receiving treatment), and to those clients who live on the mental health center's campus would most likely lead to higher attendance.

To address financial issues with implementing this program, the mental health center could consider using student nurses to lead the program instead of a nurse employed by the mental health center. Montana State University has a nursing program with students who frequently have clinical rotations in the mental health center as a part of the public health and/or psychiatric curricula. MSU nursing students could lead the group twice per year, free of charge. This would also provide students with exposure to smoking cessation curriculum during undergraduate nursing school, increasing the

likelihood that these nurses will go on to incorporate tobacco assessment and treatment in their future careers.

Conclusion

This project highlights the need for smoking cessation interventions in mental health settings. The multifactorial nature of this problem can be better understood by looking at components contributing to high smoking rates in people with mental illness.

Nurses have optimal insight into these biological and psychosocial factors as well as the ability to develop meaningful relationships with mental health patients. Various roles as advocate, teacher, counselor, leader, and health expert (Peplau, 1952) make nurses ideal for providing smoking cessation interventions in community mental health settings.

Despite the challenges experienced in implementation and analysis of this project, the smoking cessation intervention was successful in many ways. Based on client attendance, satisfaction, and smoking cessation behaviors, implementing a smoking cessation program at the community mental health center is achievable. Treating the whole person requires providers and organizations to address tobacco use, especially in individuals with mental illness where symptoms of nicotine dependence, withdrawal, and psychiatric illness are so intertwined. Implementing a smoking cessation program will continue to increase awareness, provide needed resources for clients, and has potential to greatly improve health outcomes in this population.

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APPENDICES

APPENDIX A

EVIDENCE TABLE

Reference	Type	Purpose	Results/Implications	Limitations
Ashton, M., Miller, C. L., Bowden, J. A., & Bertossa, S. (2010). People with mental illness can tackle tobacco. <i>Australian and New Zealand Journal of Psychiatry</i>, 44, 1021-1028.	Evaluation of a pilot intervention	Assess smoking reduction and cessation intervention for people with SMI	Intervention: 10 week group program facilitated by MH workers and peers. 226 recruited; 183 attended at least one session, and 105 attended 10 sessions. 30.6% stopped smoking for at least 30 days. At 12 months, 16.6% remained abstinent. Of those who completed 10 sessions 21.3% were abstinent after 12 months. Of those who were still smoking at 12 months, 89% wanted to try again.	Difficult to verify smoking status-self report. Non-randomized groups.
Ashton, M., Rigby, A., & Galletly, C. (2013). What to 1000 smokers with mental illness say about their tobacco use? <i>Australian & New Zealand Journal of Psychiatry</i>, 47(7), 631-636.	Questionnaire regarding motivation to quit smoking	To determine what motivates smokers with mental illness to quit.	85% wanted to quit; 10% more wanted to cut down; Majority concerned about health and financial issues associated with smoking	Only people who wanted to quit were in the study. Limited by specific geographic area of Australia. Self-reported cigarette use.
Baker, A., Richmond, R., Haile, M., Lewin, T. J., Carr, V. J., Taylor, R. L.,...Wilhelm, K. (2006). A randomized controlled trial of a smoking cessation intervention among people with a psychotic disorder. <i>American Journal of Psychiatry</i>, 163, 1934-1942.	RCT	To compare combined psychological and NRT intervention with usual care in individuals with psychotic disorder	298 regular smokers with psychotic disorder. SANE intervention comprised of 8 sessions, individually administered. Measurements were point prevalence abstinence rates, smoking reduction status, and changes in symptoms and functioning. No difference in abstinence rates, but significantly higher proportion of smokers who completed the session stopped smoking at each follow up points (3 mo, 6 mo, 12 mo). Strong dose relationship between session attendance and smoking reduction (1/2 of people who completed program achieved 50% or greater reduction of cigarette use). No deterioration of symptoms.	No therapy control, possible that increased therapy contact impacted smoking rates.
Baker, A., Richmond, R., Haile, M., Lewin, T. J., Carr, V. J., Taylor, R. L.,...Moeller-Saxone, K. (2007). Characteristics of smokers with a psychotic disorder and implications for smoking interventions. <i>Psychiatry Research</i>, 150, 141-152.	Analysis of self reported characteristics of smokers with psychotic disorders	Determine characteristics of smokers with psychotic illness	298 smokers were assessed. On average, they smoked 30 cigarettes per day, started smoking at 18 years old, and had made 2-3 quit attempts. Higher levels of nicotine dependence were associated with younger age of smoking initiation. Reasons for smoking included stress reduction, stimulation, and addiction. Higher level of nicotine dependence than the general population.	Lack of suitable studies for comparison. Recruitment bias
Brewer, J. A., Mallik, S., Babuscio, T. A., Nich, C.,	Pilot RCT	Evaluate mindfulness training in smoking	88 nicotine-dependent adults were randomly	Single site with 1-2 therapists. Short

Johnson, H. E., Deleone, C. M., Rounsaville, B. J. (2011). Mindfulness training for smoking cessation: Results from a randomized controlled trial. <i>Drug Alcohol Dependence</i> , 119(1-2), 72-80.		cessation	assigned to ALA Freedom From Smoking or mindfulness training. Both treatments were twice weekly for 4 weeks in groups. MT showed greater reduction in cigarette use and maintained at f/u. Authors indicate that mindfulness training may be more effective than standard treatment.	intervention time frame of 4 weeks.
Cahill, K., Stevens, S., Perera, R., & Lancaster, T. (2013). Pharmacological interventions for smoking cessation: An overview and network meta-analysis (Review) <i>Cochrane Database of Systematic Reviews</i> , (5), 1-51.	Systematic review of Cochrane reviews of randomized controlled trials (12 treatment specific reviews)	To determine how NRT, bupropion, and varenicline compare with placebo and with each other in achieving long-term abstinence (greater than 6 mo)	NRT and bupropion helped 80% more people than placebo. Varenicline more than doubled the chances of quitting compared to placebo. Varenicline helped about 50% more people quit than some nicotine replacements. Combination of NRT was as effective as using varenicline and helped more than single NRT. NRT combined with nortriptyline or bupropion was not more effective than NRT alone.	
Cavazos-Rehg, P. A., Breslau, N., Hatsukami, D., Krauss, M. J., Spitznagel, E. L., Gruzza, R. A., Bierut, L. J. (2014). Smoking cessation is associated with lower rates of mood/anxiety and alcohol use disorder. <i>Psychological Medicine</i> , 44(12), 2523-2535.	Longitudinal evaluation of National Epidemiological Study of Alcohol and Related Conditions	Psychological effects of smoking cessation	No data supports worsening mood, anxiety, or SUD symptoms after cessation, but cessation may reduce likelihood of recurrence and is associated with risk reduction.	May be unobserved confounders, relied on self report
Centers for Disease Control and Prevention. (2013). Vital signs: Current cigarette smoking among adults aged > 18 years with mental illness—United States, 2009-2011. <i>Morbidity and Mortality Weekly Report</i> , 62.	National survey on drug use and health from 2009-2011	To determine prevalence of smoking in MI	20% of adults reported some form of mental illness; of those, 36% smoked cigarettes. 3/10 cigarettes are smoked by persons with MI. Enhanced prevention and cessation efforts can further reduce smoking related morbidity and mortality.	
Connolly, M., Floyd, S., Forrest, R., & Marshall, B. (2013). Mental health nurses' beliefs about smoking by mental health facility inpatients. <i>International Journal of Mental Health Nursing</i> , 22, 288-293.	Survey	To examine beliefs of mental health nurses about smoking by clients, nurses, and visitors in inpatient facilities	Survey of 600 nurses (104 received) found that half of nurses who responded believe that smoking is helpful to therapeutic relationships. Smoke-free status made a significant difference in nurses' beliefs.	Only 17% of nurses responded, data does not accurately represent the larger population of mental health nurses.
Cook, B. L., Wayne, G. F., Kafali, N., Liu, Z., Shu, C., & Flores, M. (2014). Trends in smoking among adults with mental illness and association between mental health treatment and smoking cessation. <i>JAMA</i> , 311(2), 172-182.	National Survey data	To assess if declines in tobacco have occurred in the mental health population and examine relationship between mental health treatment and smoking cessation	National survey of noninstitutionalized US residents with and without mental illness. 32,156 respondents with mental illness and 133,113 without. Results indicated that between 2004 and 2011, smoking in mental illness	Time frame was limited from 2004-2011. No use of structured diagnostic instruments to identify mental illness. Exclusion of institutionalized

			had declined much less than those without mental illness. However, quit rates were greater among people receiving mental health treatment. Smokers with mental illness are motivated to quit and mental health is an appropriate area for incorporating cessation treatment.	persons. Cannot determine causation.
Currie, S. R., Karlty, J., Lussier, D., de Denus, E., Brown, D., & el-Guebaly, N. (2008). Outcome from a community-based smoking cessation program for persons with serious mental illness. <i>Community Mental Health Journal</i>, 44, 187-194.	Pilot study	To understand both short and long term quit rates for individuals with mental illness (6 and 12 months), compare quit success and retention rates in 4 or 8 week treatment, and determine impact of smoking cessation on weight gain, psychiatric medication, and symptom severity.	Intervention was based on "Freedom for Smoking" ALA and tailored to patients with schizophrenia. Four and 8 sessions were compared. Results indicated that 60% attended more than half of the groups and no quit rate significance was found based on length of group. Quitting was defined as abstinence. Weight gain and medication dose changes were not significant. Majority of people who quit also used NRT.	Non-randomized study with no control.
Davis, L. Kurzban, S. (2012). Mindfulness-based treatment for people with severe mental illness: A literature review. <i>American Journal of Psychiatric Rehabilitation</i>, 15, 202-232.	Literature review	Synthesis of findings from mindfulness based treatment interventions in SMI	Defines mindfulness and ability to aid in increasing self-efficacy in this population.	Not specifically related to smoking
Dickens, G. L., Stubbs, J. H., & Haw, C. M. (2004). Smoking and mental health nurses: A survey of clinical staff in a psychiatric hospital. <i>Journal of Psychiatric Mental Health Nursing</i>, 44(4), 445-451.	Cross sectional survey of 167 health professionals in a psychiatric hospital in the UK	To understand the prevalence of smoking among mental health nurses.	17.4% RNs, 31% nursing assistants, 6.5% of other health professionals smoked in this large psychiatric hospital.	Results of only one inpatient facility limits generalizability
Dickerson, F., Bennett, M., Dixon, L., Burke, E., Vaughan, C., Delahanty, J., & DiClemente, C. (2011). Smoking cessation in persons with serious mental illnesses: The experience of successful quitters. <i>Psychiatric Rehabilitation Journal</i>, 34(4), 311-316.	Qualitative study	To better understand experiences of people with SMI who have quit smoking	Participants (n = 78) were asked about strategies and motivation to quit, and willingness to assist peers in smoking cessation. On average, participants had been abstinent 7.4 years after smoking for 25.3 years at 1.5 PPD. Primary reason for quitting was health concerns (73%); cost (71%); advice from a doctor (54%); advice from others (46%); use of NRT (31%); and advice from friends who had quit (23%). Small proportion had received interventions other than NRT.	Convenience sample. No direct comparison of quitters who were not mentally ill.
Dixon, L. M., D. R., Wohlheiter, K., DiClemente, C., Goldgerg,	Cross sectional design	Determine the correlates and sequelae of increased smoking in population	Increased smoking was r/t higher levels of expired CO, Caucasian ethnicity, greater	Reliance on self-report, cross sectional design.

R., Kreyenbuhl, J.,...Davin, C. (2007). Correlates of severity of smoking among persons with severe mental illness. <i>The American Journal on Addictions</i>, 16, 101-110.		with SMI	likelihood of gum disease, greater perceived stress, poorer overall subjective quality of life, low satisfaction with finances, health leisure and social relationships.	No correction for multiple statistical comparisons.
Dixon, L. M., D. R., Wohlheiter, K., DiClemente, C., Goldgerg, R., Kreyenbuhl, J.,...Davin, C. (2007). Correlates of severity of smoking among persons with severe mental illness. <i>The American Journal on Addictions</i>, 16, 101-110.	Cross sectional design	Determine the correlates and sequelae of increased smoking in population with SMI	Increased smoking was r/t higher levels of expired CO, Caucasian ethnicity, greater likelihood of gum disease, greater perceived stress, poorer overall subjective quality of life, low satisfaction with finances, health leisure and social relationships.	Reliance on self-report, cross sectional design. No correction for multiple statistical comparisons.
Dodd, S., Brnabic, A. J. M., Berk, L., Fitzgerald, P. B., de Castella, A. R., Filia, S.,...Berk, M. (2010). A prospective study of the impact of smoking on outcomes in bipolar and schizoaffective disorder. <i>Comprehensive Psychiatry</i>, 51, 504-509.	Naturalistic, longitudinal study	To assess impact of smoking on mental health outcomes in bipolar and schizoaffective disorder	122 participants were interviewed 9 times over 24 months. Daily smokers had poorer scores on Clinical Global Impressions-depression and bipolar scales and longer hospital stays compared with non-smokers.	Self-report smoking status. Nicotine dependence not assessed.
Fiore, M. C., Jaen, C. R., Bailey, W. C., Benowitz, N. L., Curry, S. L., Dorfman, S. F.,...Wewers, M. E. (2008). Treating tobacco use and dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: U.S. Department of Health and Human Services. Public Health Service.	Clinical Practice Guideline	To guide clinicians in tobacco use treatment	1. Tobacco dependence is a chronic disease 2. It is important that healthcare systems consistently identify and document tobacco use. 3. Treatments are effective across a range of populations and clinicians should encourage every patient willing to make a quit attempt to use counseling and medications. 4. Brief treatment is effective. 5. Counseling is effective (individual, group, and telephone) 6. Medications are effective 7. Combination counseling and medications is more effective than either alone. 8. Telephone counseling has a broad reach, so quit lines should be promoted. 9. Motivational interviewing should be implemented with clients unwilling to quit. 10. Treatments are both clinically effective and cost-effective, so they should be covered by insurance plans.	Newest guideline is 8 years old.
Glover, M., Fraser, T., Bullen, C., Wallace-Bell, M., McRobbie, H., & Hadwen, G. (2014). <i>Transition to a smoke-free</i>	Qualitative study	To examine barriers to implementing smoke free policies in New Zealand services.	56 interviews from staff, smoke-free coordinators, and cessation specialists. Most organizations were in the continuum between	Staff surveyed were those willing to participate. No service users were interviewed.

culture within mental health and drug and alcohol services: A survey of key stakeholders. <i>International Journal of Mental Health Nursing</i>, 23, 183-191.			permissive and transitional smoke free cultures. 8 organizations had smoke free facilities. Staff smoking, negative staff attitudes to becoming smoke free, poor knowledge of nicotine dependence and smoking related harm, and poor knowledge of cessation-support options.	
Goldie, C. L., Masuhara, E. J., Heah, T., Okoli, C., & Johnson, J. L. (2012). Outpatient tobacco dependence treatment for individuals with severe mental illness: The Butt Out Program outcomes. <i>Canadian Journal of Community Mental Health</i>, 31(1), 87-98.	Pilot program evaluation	Evaluate the Butt Out program in outpatient mental health setting.	Intervention was 24 weeks of pharmacotherapy; 12 weeks behavioral therapy; and 12 weeks of group support. The end of treatment abstinence rate was 8.6%, but for those who finished the program, it was 107%. 28% of completers reduced cigarette use by 50%.	Pilot study; small sample size.
Himelhoch, S., Riddle, J., & Goldman, H. H. (2014). Barriers to implementing evidence-based smoking cessation practices in nine community mental health sites. <i>Psychiatric Services</i>, 65(1), 75-80.	Survey questionnaire	To determine possible resources, barriers, and willingness to use evidence-based interventions in MH settings	Evidence-Based Practice Attitude Scale was sent to 95 participants. Less than ½ reported asking clients about smoking; 33% advised or assisted in smoking cessation; 10% reported referring smokers to telephone quit lines; 26% reported being confident in providing smoking cessation interventions. The major barrier to not providing cessation guidance was the belief that psychiatric patients were not interested in quitting (77%).	
Jha, P., Ramasundarahettige, C., Landsman, V., Rostron, B., Thun, M., Anderson, R. N.,...Peto, R. (2013). 21st-Century hazards of smoking and benefits of cessation in the United States. <i>The New England Journal of Medicine</i>, 368, 341-350.	Analysis of health hazard ratios from U.S. National Health Interview Survey of 113,752	Determine health hazards of smoking and benefits of cessation in the U.S.	Smokers 25079 have death rates about 3 times those who have never smoked. Most of the mortality among smokers was due to neoplasm, vascular, respiratory and other diseases caused by smoking. Life expectancy was shortened by more than 10 years among current smokers compared to those who have never smoked. Those who quit from 24-34 gained 10 years, 35-44 gained 9 years, and 45-54 gained 6 years compared to those who continued to smoke.	
Jiloha, R. C. (2010). Biological basis of tobacco addiction: Implications for smoking-cessation treatment. <i>Indian Journal of Psychiatry</i>, 52(4), 301-307.	Review of background of tobacco addiction	To understand implications of smoking cessation treatment and biologic basis for smoking tobacco.	Acetylcholine, dopamine, serotonin, norepinephrine, gaba, and glutamate are all affected by tobacco use.	Review of pathophysiology

Johnson, J. L., Malchy, L. A., Ratner, P. A., Hossain, S., Procyshyn, R. M., Bottorff, J. L.,...Schultz, A. (2009). Community mental healthcare providers' attitudes and practices related to smoking cessation interventions for people living with severe mental illness. <i>Patient Education and Counseling</i> , 77, 289-295.	Questionnaire survey	Describe MH providers' attitudes toward tobacco use, personal smoking status, confidence in offering smoking cessation, and extent to which they incorporated smoking interventions in practice.	282 providers responded to the survey. 22% were current smokers. Those more likely to provide interventions for cessation were providers who had sympathetic attitudes, never or former smokers, healthcare professionals rather than paraprofessionals, more confidence, more experience in mental health.	Low response rate, providers lacked interest in the survey. Cross-sectional data cannot determine causality.
Kisely, S. R., Wise, M., Preston, N., Malmgren, S., & Shannon, P. (2003). A group intervention to reduce smoking in individuals with psychiatric disorder: Brief report of a pilot study. <i>Australian & New Zealand Journal of Psychiatry</i> , 27(1), 61-63.	Waitlist treatment cross-over design	To evaluate SANE group intervention to help individuals with psychiatric illness stop smoking	Measures: smoking cessation, motivation to stop, the Fagerstrom Test for Nicotine Dependence (FTND), urinary cotinine and psychiatric symptoms on the General Health Questionnaire. 38 participants, by the end of the intervention (8 weekly ½ hour sessions) almost ¼ had stopped smoking. No change in psychiatric morbidity over the course of the intervention.	Larger RCT needed. High dropout rate.
Leonard, S., Adler, L. E., Benhammou, K., Berger, R., Breese, C. R., Drebing, C.,...Freedman, R. (2001). Smoking and Mental Illness. <i>Pharmacology Biochemistry and Behavior</i> , 70(4), 561-570.	Review of pathophysiology of smoking in schizophrenia and mental illness	To better understand smoking in mental illness from a biological perspective	Authors describe gating deficits in people with schizophrenia and those in manic stages of bipolar disorder. Genetic determinants are also discussed.	Not a trial, but review of pathophysiology.
Leventhal, A. M., Piper, M. E., Japuntich, S. J., Baker, T. B., & Cook, J. W. (2014). Anhedonia, depressed mood, and smoking cessation outcome. <i>Journal of Consulting and Clinical Psychology</i> , 82(1), 122-129.	Cross-sectional analysis	Analyze the contributions of depressed mood and anhedonia history to the prediction of smoking outcomes	Lifetime history of anhedonia predicted cessation outcome in 1469 participants	Cross-sectional analysis limits causality. Study did not explore non-affective symptoms in relation to cessation outcomes.
Lindson-Hawley, N., Thompson, T. P., & Begh, R. (2015). Motivational interviewing for smoking cessation (Review). <i>Cochrane Database of Systematic Reviews</i> (3), 1-78.	Systematic review of RCTs (28 studies)	Determine whether MI promotes smoking cessation	MI may be helpful in assisting people to quit smoking, but variations in study quality and heterogeneity between studies exist. MI more helpful than brief advice or usual care when provided by trained counselors and general practitioners. MI more successful when done by GP instead of nurses or counselors. A single session appeared to be more effective than multiple sessions.	
Mann-Wrobel, M. C., Bennett, M. E., Weiner, E. E., Buchanan, R. W., &	Subset of a larger RCT	Understand relationship between smoking history, motivation to change,	Through a series of scales, researchers found that participants had a high level	Small sample size; and many participants did not

Ball, P. M. (2011). Smoking history and motivation to quit in smokers with schizophrenia in a smoking cessation program. <i>Schizophrenia Research</i>, 126, 277-283.		outcomes in people with schizophrenia	of nicotine dependence at baseline and were most concerned about health consequences. Reasons for smoking included boredom, coping with negative affect, and had a low level of confidence that they could quit. Targeting interventions for teaching coping skills with boredom, negative affect, and high risk situations in addition to education, medication and addressing low-self efficacy are important when implementing an intervention.	complete the post-treatment assessment.
Masuhara, J. E., Heah, T., & Okoli, C. T. C. (2013). Outcomes of a tobacco treatment programme for individuals with severe and persistent mental illness attending a community mental health team. <i>Journal of Smoking Cessation</i>, 9(2), 60-67.	Retrospective chart review of a pilot intervention	Assess the outcomes of an evidence based smoking cessation treatment intervention in community mental health	Of those that completed the program (67%), 26.7% were abstinent at the end and 50% had reduced their consumption to at least 50% of their baseline. (Butt Out program)	Some demographic variables were not available, which may have affected outcomes. Authors were unable to obtain follow up beyond the program's end. Specific MI diagnoses were not available. Small sample size limits generalizability.
McKay, C. E., & Dickerson, F. (2012). Peer supports for tobacco cessation for adults with serious mental illness: A review of the literature. <i>Journal of Dual Diagnoses</i>, 8(2), 104-112.	Literature review	Examine peer support role in tobacco cessation in mental illness	4 trials reviewed. The role of peers in interventions are promising, but more research is needed	Small number of interventions reviewed and few has been subjected to rigorous review.
Mitchell, A. J., Vancampfort, D., De Hert, M., & Stubbs, B. (2015). Do people with mental illness receive adequate smoking cessation advice? A systematic review and meta-analysis. <i>General Hospital Psychiatry</i>, 37, 14-23.	Systematic review and meta-analysis	Review the rates of receipt of smoking cessation advice from people with and without MI.	Results of 7 studies showed that rates of advice given are similar between people with and without mental illness; however, those without MI are slightly more likely to receive smoking cessation advice	Several types of MI pooled together in main analysis. All studies were from UK and US, so it is unknown how these generalize to other countries. No data on newly diagnosed people with MI, most were over 50 and had physical comorbidities. Unknown heterogeneity of interventions provided.
Morris, C. D., Burnes, E. K., Waxmonsky, J. A., & Levinson, A. H. (2014). Smoking cessation behaviors among persons with psychiatric diagnoses: Results from a population-	State survey in CO	A 2008 survey conducted to examine state-level tobacco attitudes and behaviors.	Smoking was twice as prevalent in residents with MH diagnoses. Those with MH diagnoses were more likely to attempt quitting and use NRT and succeed quitting with similar rates to	Reliance on self-report and cross sectional design. Study only done in CO, national study needed.

level state survey. <i>Drug and Alcohol Dependence</i> , 136, 63-68.			those without MH diagnoses. Smokers with anxiety/PTSD were less likely to successfully quit as compared to other MH diagnoses (0.7% vs. 11.9%)	
Morris, C., Waxmonsky, J., May, M., Giese, A., & Martin, L. (2009). Smoking cessation for persons with mental illness: A toolkit for mental health providers. University of Colorado, Denver, Department of Psychiatry, Behavioral Health and Wellness Program. Retrieved from http://www.integration.samhsa.gov/Smoking_Cessation_for_Persons_with_MH.pdf	Toolkit and literature review	To provide clinicians with a toolkit for treating tobacco use in mental illness	Use of 5 A's and R's. Provides literature on background and significance of the problem of smoking in mental illness.	
Morris, C. D., Waxmonsky, J. A., May, J. G., Tinkelman, D. G., Dickinson, M., & Giese, A. A. (2011). Smoking reduction for persons with mental illnesses: 6-month results from community-based interventions. <i>Community Mental Health Journal</i> , 47, 694-702.	Pilot study at four community mental health clinics.	To examine two cessation interventions: telephone quit line (counseling and NRT) and community-based group counseling (up to 10 sessions based on SANE).	At six-month follow up, both groups had decreased tobacco use. Those who received both quit line services and group counseling intervention were more likely to have a 50% tobacco reduction. Additionally, tobacco dependence, depression symptoms, and psychotic symptoms were reduced for all groups. Daily functioning was also increased.	Small sample size; no control group, although participants were randomized; no assessment of previous quit attempts; NRT may not have been sufficient; staff training
Morris, C. D., Waxmonsky, J. A., May, M. G., & Giese, A. A. (2009). What do persons with mental illnesses need to quit smoking? Mental health consumer and provider perspectives. <i>Psychiatric Rehabilitation Journal</i> , 32(4), 276-284.	Qualitative 10 focus groups of adults with psychiatric disorders and clinicians	Determine factors impeding and supporting tobacco cessation	1) Barriers to treatment: lack of resources and negative expectations among providers 2) Implementation: resources for tobacco cessation and infrastructure of organizations 3) Knowledge deficits among consumers and providers 4) Negative influences: greater acuity of mental illness and smoking used to control symptoms; relief of tension and anxiety; boredom; view of smoking as a social event; 5) Treatment needs: Need for consumer focused strategies and peer advocates	Limited generalizability due to use of convenience sample
Morisano, D., Wing, V. C., Sacco, K. A., Arenovich, R., & George, T. P. (2013). Effects of tobacco smoking on neuropsychological function in schizophrenia in comparison to other	Cross sectional design	Study the neuropsychological performance in schizophrenia, bipolar disorder, and MDD as it relates to smoking status	108 participants including smokers with schizophrenia, bipolar disorder, MDD; non-smokers with schizophrenia, bipolar disorder and MDD and control smokers, control	Small sample sizes of subgroup.

psychiatric disorders and non-psychiatric controls. <i>The American Journal on Addictions</i> , 22, 46-53.			non-smokers. Participants with SZ performed worse than controls and BD and MDD did not differ from controls. Better performance was seen with SZ smokers than non-smokers. Smoking status not associated with altered cognitive performance in BD or MDD. Non-psychiatric group there was an association between smoking and worse performance. Targeting cognitive deficits in smokers with SZ who want to quit may be indicated.	
Prochaska, J. J., Fromont, S. C., Leek, D., Hudmon, K. S., Louie, A. K., Jacobs, M. H., & Hall, S. M. (2008). Evaluation of an evidence-based tobacco treatment curriculum for psychiatry residency training programs. <i>Academic Psychiatry</i> , 32(6), 484-492.	Smoking cessation curriculum evaluation	Determine effectiveness of a teaching curriculum for psychiatry residence	4 hour curriculum is evidence based and developed using extensive literature review. Implementation was associated with improvement in residents' knowledge, attitudes, confidence, and counseling behaviors at post training and sustained at the 3 month follow up.	
Rice, V. H., Hartmann-Boyce, J., & Stead, L. F. (2013). Nursing interventions for smoking cessation (Review). <i>Cochrane Database of Systematic Reviews</i> (8), 1-90.	Systematic review of randomized trials (45 studies)	Determine the effectiveness of nursing-delivered smoking cessation interventions	Potential benefits of counseling delivered by nurses with reasonable evidence of effectiveness.	Results not consistent across all studies. Few studies available to compare.
Roberts, S. H. Baily, J. E. (2011). Incentives and barriers to lifestyle interventions for people with severe mental illness: A narrative synthesis of quantitative, qualitative, and mixed methods studies. <i>Journal of Advanced Nursing</i> , 67(4), 690-708.	Narrative synthesis of quantitative, qualitative, and mixed methods	Examine evidence for incentives and barriers to lifestyle interventions in SMI	No studies specifically addressed incentives and barriers to participation in lifestyle interventions. Possible incentives and barriers include illness symptoms, treatment effects, lack of support/negative attitudes (barriers); peer and staff support, knowledge, personal attributes, symptom reduction (incentives).	Narrative approach limits findings. Dissimilarity of studies makes it difficult to extract common materials and appraisal. Reviewers personal bias in interpretation of literature.
Robson, D., Haddad, M., Gray, R., & Gournay, K. (2012). Mental health nursing and physical health care: A cross-sectional study of nurses' attitudes, practice, and perceived training needs for the physical health care of people with severe mental illness. <i>International Journal of Mental Health Nursing</i> , 22, 409-417.	Cross-sectional study of mental health nurses	To examine mental health nurses' attitudes to physical care	585 nurses responded to a survey stating that they frequently gave advice on diet and exercise, and less frequently gave advice regarding cancer screening and smoking cessation. Half of respondents reported that they frequently supported clients to stop smoking, and 21% of respondents were current smokers. Study conducted in UK.	Low response rate of 52% has the potential for bias, limiting generalizability. Cross-sectional design limits causality.

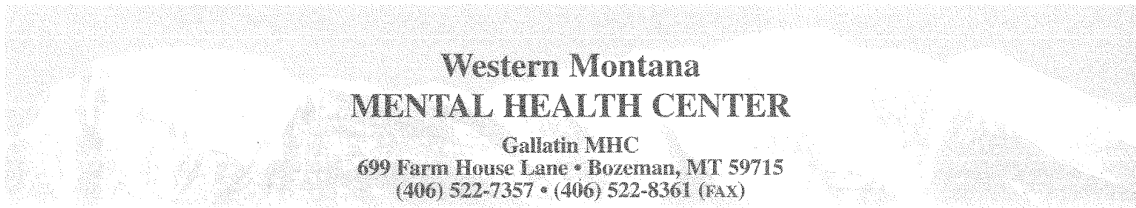
Sarna, L., Bialous, S. A., Sinha, K., Yang, Q., & Wewers, M. E. (2010). Are health care providers still smoking? Data from the 2003 and 2006/2007 Tobacco Use Supplement-Current Population Surveys. <i>Nicotine & Tobacco Research</i> , 12(11), 1167-1171.	Subset of a larger RCT	Understand relationship between smoking history, motivation to change, outcomes in people with schizophrenia	Through a series of scales, researchers found that participants had a high level of nicotine dependence at baseline and were most concerned about health consequences. Reasons for smoking included boredom, coping with negative affect, and had a low level of confidence that they could quit. Targeting interventions for teaching coping skills with boredom, negative affect, and high risk situations in addition to education, medication and addressing low-self efficacy are important when implementing an intervention.	Small sample size; and many participants did not complete the post-treatment assessment.
Saiyad, M., El-Mallakh, R. S. (2012). Smoking is associated with greater symptom load in bipolar disorder patients. <i>Annals of Clinical Psychiatry</i> , 24(4), 305-309.	Cross sectional study	Determine relationship between smoking and symptom load in bipolar disorder	134 outpatients with bipolar disorder included in the study. Results showed that smokers had more severe anxiety symptoms, depressive symptoms, and manic symptoms.	Nature of the relationship is not clear due to cross sectional design
Schroeder, S. A., & Morris, C. D. (2010). Confronting a neglected epidemic: Tobacco cessation for persons with mental illnesses and substance abuse problems. <i>Annual Review of Public Health</i> , 31, 297-314.				
Siru, R., Hulse, G. K., & Tait, R. J. (2009). Assessing motivation to quit smoking in people with mental illness: A review. <i>Addiction</i> , 104, 719-733.	Systematic review of 11 articles using stages of change algorithms to assess motivation to quit	Determine motivation to quit smoking in MI	Results suggest that people with MI are as motivated to quit as the general population. Those with psychotic disorders may be slightly less motivated than people with depression. Combination from 9 studies suggests that greater than 1/2 of smokers with MI may want to stop smoking within 30 days.	Heterogeneity of studies with respect to sample characteristics and methods.
Smit, E. S., De Vries, H., & Hoving, C. (2013). Determinants of practice nurses' intention to implement a new smoking cessation intervention: The importance of attitude and innovation characteristics. <i>Journal of Advanced Practice Nursing</i> , 69(12), 2665-2674.	Cross-sectional descriptive study of 61 general practice nurses.	To identify determinants of nurses' intention to implement new smoking cessation interventions and attitudes Study was based on a RCT of a nursing smoking cessation intervention.	Nurses' intention to implement a new practice intervention for smoking cessation was significantly associated with innovation characteristics and attitude. 6.1% of general practice nurses in this study used tobacco. 37.5% of nurses were "intenders" (planned to implement the intervention" and 62.5% were "non-intenders". "Intenders" were more likely to use clinical practice guidelines and have recruited more patients to	Cross-sectional study limits causality. Small sample size. Unable to determine if nurses actually implemented intervention.

Smith, P. H., Homish, G. G., Giovino, G. A., & Kozlowski, L. T. (2014). Cigarette smoking and mental illness: A study of nicotine withdrawal. <i>American Journal of Public Health, 104</i> (2), 127-133.	Analysis of data from national epidemiologic survey on Alcohol and related conditions and a 2 wave cohort telephone survey of a national sample of smokers	Compare the likelihood of being diagnosed with nicotine withdrawal syndrome and severity of withdrawal symptoms between smokers with and without mental illness. Examine whether smokers with MI are more or less likely to quit or make quit attempts and how nicotine withdrawal affected quitting.	the intervention. MI associated with greater likelihood of withdrawal symptoms. 44% of nicotine withdrawal syndrome diagnoses were those with MI. Smokers with MI were motivated to quit, but less likely to be successful. Dependence and withdrawal independently accounted for lower likelihood of success. Nicotine withdrawal is important to target in cessation interventions.	Cross sectional design. Unknown whether symptoms occurred during quit attempts or what the time course was. Self-report used. Possible sample bias.
Taylor, G., McNeill, A., Farley, A., Lindson-Hawley, N., & Aveyard, P. (2014). Change in mental health after smoking cessation: Systematic review and meta-analysis. <i>BMJ, 348</i> (115), 1-22.	Systematic review and meta-analysis of observational studies	To investigate change in mental health after smoking cessation compared to continuing to smoke	26 longitudinal studies with questionnaires were reviewed. Anxiety, depression, and mixed anxiety and depression, and stress significantly decreased in quitters as compared to continuing smokers	Observational studies were reviewed, not randomized controlled trials.
Tidey, J. W., Colby, S. M., & Xavier, E. M. H. (2014). Effects of smoking abstinence on cigarette craving, nicotine withdrawal, and nicotine reinforcement in smokers with and without schizophrenia. <i>Nicotine & Tobacco Research, 16</i> (3), 326-334.	Before and after results of abstinence.	Compare cravings and withdrawal symptoms in 72 hour period; compare reinforcing effects of nicotine before and after abstinence; compare latency to smoking lapse in schizophrenia and control; and examine predictors of lapse	Those with schizophrenia had greater nicotine withdrawal symptoms in 72 hours; greater nicotine preference after abstinence; and lapsed sooner than controls. Lapse was mediated by baseline depression and nicotine withdrawal severity. Negative affect is a key contributor to difficulty quitting.	Incentives were provided to quit (extrinsic motivation); no assessment of self-efficacy for quitting or measures of executive functioning
Tsoi, D. T., Porwal, M., & Webster, A. C. (2013). Interventions for smoking cessation and reduction in individuals with schizophrenia (Review). <i>Cochrane Database of Systematic Reviews</i> (2).	Systematic review of randomized trials (34 trials)	To evaluate benefits and harms of different treatment for nicotine dependence in schizophrenia	Bupropion increases smoking abstinence without harming MH. Varenicline may improve cessation rates, but possible psychiatric adverse effects exist. Contingent reinforcement may reduce smoking in the short term, but effects long term are not known. Too little evidence to determine if other treatments like NRT and psychosocial intervention are helpful.	
Weinberger, A. H., Reutenauer, E. L., Allen, T. M., Termine, A., Vessicchio, J. C., Sacco, K. A.,...George, T. P. (2007). Reliability of the Fagerstrom Test for Nicotine Dependence, Minnesota Nicotine Withdrawal Scale, and Tiffany Questionnaire for Smoking with and without schizophrenia. <i>Drug and Alcohol Dependence, 86</i> ,	Comparison of reliability and consistency of nicotine dependence tests	Examine internal consistency of FTND, M-NWS, and TQSU in smokers with schizophrenia and control smokers	Measures found to be reliable for smokers with schizophrenia and without.	Inclusion criteria of greater than or equal to five on the FTND may have limited variability. Authors did not control for length of time since last cigarette.

278-282. Williams, J. W., Dwyer, M., Verna, M., Zimmermann, M. H., Gandhi, K. K., Galazyn, M.,...Steinberg, M. L. (2011). Evaluation of the CHOICES program of peer-to-peer tobacco education and advocacy. <i>Community Mental Health Journal</i>, 47, 243-251.	Pilot evaluation study	To determine effectiveness of CHOICES program in 102 outpatient smokers.	At one month, 84% smoked 13 CPD, reduced from baseline of 19. 29% tried to quit smoking in the month after the peer session, and 55% reduced smoking. Positive feedback from consumers about the program. Peers were trained in smoking education	Pilot study, no assessment of motivational levels of smokers prior to them receiving the intervention. Limited to hospital or care environment.
Williams, J. M., Gandhi, K. K., Lu, S.-E., Kumar, S., Steinberg, M. L., Cottler, B., & Benowitz, N. L. (2011). Shorter interpuft interval is associated with higher nicotine intake in smokers with schizophrenia. <i>Drug and Alcohol Dependence</i>, 118, 313-319.	Controlled trial	Measure smoking and serum nicotine in smokers with schizophrenia as compared to controls and examine puff patterns for first cigarette of the day.	75 participants with schizophrenia and 86 controls smokers. Smokers with schizophrenia smoked more cigarettes and took 2.8 more puffs per cigarette. Time between puffs was shorter and smokers with schizophrenia took one minute less to smoke a cigarette. Decrease in interpuft interval was associated with higher serum nicotine and cotinine. Higher cravings associated with shorter interpuft interval.	
Williams J. M. & Hughes J. R. (2003). Pharmacotherapy treatments for tobacco dependence among smokers with mental illness or addiction. <i>Psychiatric Annals</i>, 33, 457- 466.	Review of pharmacotherapy for treatment of smoking in MI	To educate providers about options for treating tobacco use in mental illness with medication.	NRT, bupropion, and varenicline are discussed.	Not a study, but review of information.
Williams, J. W., Zimmermann, M. H., Steinberg, M. L., Gandhi, K. K., Delnevo, C., Steinberg, M. B., & Foulds, J. (2010). A comprehensive model for mental health tobacco recovery in New Jersey. <i>Adm Policy Mental Health</i>, 38(5), 368-383.	Development of treatment model	To develop and implement a state-wide treatment model for tobacco cessation in SMI	Components of clinical treatment include system wide changes, educating MH professionals on EB treatments, engaging smokers, use MI, access to NRT, peer support programs, smoke-free facilities.	Not a study, but review of literature and evidence.
Wing, V. C., Bacher, I., Sacco, K. A., & George, T. P. (2011). Neuropsychological performance in patients with schizophrenia and controls as a function of cigarette smoking status. <i>Psychiatry Research</i>, 188, 320-326.	Cross sectional design	Determine association between smoking and cognitive function in schizophrenia	Never-smokers with schizophrenia performed poorest on measures of sustained attention, processing speed and response inhibition. Smoking did not alter neuropsychological performance	Cross-sectional design limits causality.

APPENDIX B

ORGANIZATION LETTER OF APPROVAL



July 7, 2015

Montana State University
Institutional Review Board
960 Technology Blvd Rm 127
Bozeman, MT 59718

Dear MSU IRB,

I have reviewed the proposal for Carly Meehan's smoking cessation project to be conducted at Gallatin Mental Health Center. Addressing cigarette smoking in individuals with mental illness will be beneficial to the health and wellbeing of our clients and risks to implementing this process are minimal.

As the nursing director of Gallatin Mental Health Center in Bozeman, MT, I give permission for this project to be conducted at our facility.

Please feel free to contact me with further questions or concerns.

Sincerely,

A handwritten signature in dark ink, appearing to read "Shelby Frye, PMHNP-BC".

Shelby Frye, PMHNP-BC
Nursing Manager, Gallatin Mental Health Center
699 Farmhouse Lane
Bozeman, MT 59715

APPENDIX C

SUBJECT CONSENT FORM FOR
PARTICIPATION IN HUMAN RESEARCH AT
MONTANA STATE UNIVERSITY

SUBJECT CONSENT FORM
FOR
PARTICIPATION IN HUMAN RESEARCH AT
MONTANA STATE UNIVERSITY

Smoking Cessation: Implementation of a Group Intervention in a Community Mental Health Setting

You are being asked to participate in a **research** study examining smoking cessation behaviors before and after an 8-week smoking cessation group at Gallatin Mental Health Center. By participating in this project, we hope to better serve you as a client by providing appropriate resources to help you quit smoking. You were chosen as a participant for this project because of your smoking behaviors and desire to quit and/or learn more about smoking.

Participation is voluntary. If you agree, you will be asked to attend a group smoking cessation intervention once per week for 8 weeks. Groups will last 60-90 minutes. Prior to group, the nurse will assess smoking behaviors and history. You will also be asked to participate in a short interview regarding your health and satisfaction with this intervention. You will be contacted via telephone 4 weeks after the end of this intervention to follow up regarding smoking rate and/or quit attempts. Participation is voluntary, and you can choose to not answer any question that you do not want to answer, and you can stop at any time. Your personal health information will be kept confidential according to the HIPAA guidelines. It may be shared with individuals directly caring for you, mental health clinicians and primary care providers, as well as researchers with direct involvement in this project. Identifying information will not be used.

If you should choose to quit smoking during this group, there is a risk of nicotine withdrawal symptoms including depressed mood, anxiety, and irritability. The nurse will be in contact with your mental health provider during the course of the intervention and you will be referred for an assessment as needed. Medications to ease withdrawal symptoms can be provided by your mental health prescriber. Benefits of smoking cessation, including reduced financial burden (not spending money on cigarettes) and the potential of improved health may be achieved through program attendance.

Should you decline participation at any time, you will receive care as usual and this informed consent and survey will be terminated. This project is not funded and requires no cost to the participant. If any questions arise during the course of this project, they may be directed to Carly Meehan, RN, DNP student [carly.meehan@msu.montana.edu]. If you have additional questions about the rights of human subjects you may contact the Chair of the Institutional Review Board, Mark Quinn, (406) 994-4707 [mquinn@montana.edu].

AUTHORIZATION: I have read the above and understand the discomforts, inconvenience and risk of this study. I, _____ (name of subject), agree to participate in this research. I also agree that my health information can be collected and used by the researchers and staff for the research study described in this consent form. I understand that I may later refuse to participate, and that I may withdraw from the study at any time. I have received a copy of this consent form for my own records.

Signed: _____ Date: _____

Investigator: _____ Date: _____

APPROVED
MSU IRB
07/27/2015
Date approved

AUTHORIZATION TO SHARE PERSONAL HEALTH INFORMATION IN RESEARCH

You are being asked to take part in research described in the attached consent form. To do this research, we need to collect health information that identifies you. We will collect the results of tests, questionnaires and interviews, including diagnoses, medical/mental health history, and smoking history. We will only collect information that is needed for the research. This information is described in the attached consent form. For you to be in this research, we need your permission to collect and share this information.

We will share your health information with people at the hospital who help with the research. We may share your information with other researchers outside of the hospital. We may also share your information with people outside of the hospital who are in charge of the research, pay for or work with us on the research. Some of these people make sure we do the research properly. The "confidentiality" section of the consent form says who these people are. Some of these people may share your health information with someone else. If they do, the same laws that the hospital must obey may not protect your health information. If you sign this form, we will collect your health information until the end of the research. We will keep all the information for at least **six years**, in case we need to look at it again. We will protect the information and keep it confidential according to current Health Insurance Portability and Accountability Act. ☐ ☐ Your information may also be useful for other studies. We can only use your information again if the Institutional Review Board gives us permission. This committee may ask us to talk to you again before doing the research. But the committee may also let us do the research without talking to you again if we keep your health information private.

☐ ☐ If you sign this form, you are giving us permission to collect, use and share your health information. You do not need to sign this form. If you decide not to sign this form, you cannot be in the research study.

You need to sign this form and the attached consent form if you want to be in the research study. We cannot do the research if we cannot collect, use and share your health information.

☐ ☐ If you change your mind later and do not want us to collect or share your health information, you need to send a letter to the researcher listed on the attached consent form. The letter needs to say that you have changed your mind and do not want the researcher to collect and share your health information. You may also need to leave the research study if we cannot collect any more health information. We may still use the information we have already collected. We need to know what happens to everyone who starts a research study, not just those people who stay in it.

Signed: _____ Date: _____

Investigator: _____ Date: _____

APPROVED
MSU IRB
07/29/2015
Date approved

APPENDIX D

INSTITUTIONAL REVIEW BOARD
FOR THE APPROVAL OF HUMAN SUBJECTS



INSTITUTIONAL REVIEW BOARD
For the Protection of Human Subjects
FWA 00000165

960 Technology Blvd. Room 127
 c/o Immunology & Infectious Diseases
 Montana State University
 Bozeman, MT 59718
 Telephone: 406-994-6783
 FAX: 406-994-4303
 E-mail: cherylj@montana.edu

Chair: Mark Quinn
 406-994-5721
 mquinn@montana.edu
Administrator:
 Cheryl Johnson
 406-994-6783
 cherylj@montana.edu

MEMORANDUM

TO: Carly Meehan and Deanna Babb

FROM: Mark Quinn *Mark Quinn CJ*
 Chair, Institutional Review Board for the Protection of Human Subjects

DATE: July 27, 2015

SUBJECT: "Smoking Cessation: Implementation of a Group Intervention in a Community Mental Health Setting" [CM072715]

The above proposal was reviewed by expedited review by the Institutional Review Board. This proposal is now approved for a period of one-year.

Please keep track of the number of subjects who participate in the study and of any unexpected or adverse consequences of the research. If there are any adverse consequences, please report them to the committee as soon as possible. If there are serious adverse consequences, please suspend the research until the situation has been reviewed by the Institutional Review Board.

Any changes in the human subjects' aspects of the research should be approved by the committee before they are implemented.

It is the investigator's responsibility to inform subjects about the risks and benefits of the research. Although the subject's signing of the consent form, documents this process, you, as the investigator should be sure that the subject understands it. Please remember that subjects should receive a copy of the consent form and that you should keep a signed copy for your records.

In one year, you will be sent a questionnaire asking for information about the progress of the research. The information that you provide will be used to determine whether the committee will give continuing approval for another year. If the research is still in progress in **3 years**, a complete new application will be required.

APPENDIX E

NURSING OUTCOMES CLASSIFICATION SCALE:
SMOKING CESSATION BEHAVIORS

NOC Smoking Cessation Behavior

Definition: Personal actions to eliminate tobacco use

Outcome	Never Demonstrated 1	Rarely Demonstrated 2	Sometimes Demonstrated 3	Often Demonstrated 4	Consistently Demonstrated 5	
Expresses willingness to stop smoking						N/A
Expresses belief in ability to stop smoking						N/A
Identifies benefits of smoking cessation						N/A
Identifies negative consequences of tobacco use						N/A
Develops effective strategies to eliminate tobacco use						N/A
Identifies barriers to tobacco elimination						N/A
Adjusts tobacco elimination strategies as needed						N/A
Commits to tobacco elimination strategies						N/A
Follows selected tobacco elimination strategies						N/A
Participates in screening for associated health problems						N/A

Uses strategies to cope with withdrawal symptoms						N/A
Uses behavior modification strategies						N/A
Uses effective coping strategies						N/A
Obtains assistance from health professional						N/A
Uses personal support system						N/A
Uses reputable sources of information						N/A
Uses nicotine replacement therapy						N/A
Uses alternative therapies						N/A
Identifies emotional states that affect tobacco use						N/A
Adjusts lifestyle to promote tobacco elimination						N/A
Uses prescribed medications as recommended						N/A
Uses non-prescription medications as recommended						N/A
Uses available support						N/A

groups						
Uses available community resources						N/A
Participates in counseling						N/A
Participates in telephone counseling						N/A
Monitors for signs of depression						N/A
Eliminates tobacco use						N/A
Commits to tobacco abstinence						N/A

Moorhead, S., Johnson, M., Maas, M. L., & Swanson, E. (2013). *Nursing Outcomes Classification (NOC): Measurement of health outcomes*. (5th ed.) (pp. 513-514). St. Louis, MO: Elsevier.

APPENDIX F

FAGERSTRÖM TEST FOR
CIGARETTE DEPENDENCE

FAGERSTRÖM TEST FOR CIGARETTE DEPENDENCE (FTCD)

1. How soon after you wake up do you have your first cigarette?
 - A. Within 5 minutes (3)
 - B. 6-30 minutes (2)
 - C. 31-60 minutes (1)
 - D. After 60 minutes (0)

2. Do you find it difficult to refrain from smoking in places where it is forbidden?
 - A. Yes (1)
 - B. No (0)

3. Which cigarette would you hate most to give up?
 - A. The first one in the morning (1)
 - B. All others (0)

4. How many cigarettes per day do you smoke?
 - A. 10 or fewer (0)
 - B. 11-20 (1)
 - C. 21-30 (2)
 - D. 31 or more (3)

5. Do you smoke more frequently during the first hours after waking than during the rest of the day?
 - A. Yes (1)
 - B. No (0)

6. Do you smoke even if you are so ill that you are in bed most of the day?
 - A. Yes (1)
 - B. No (0)

TOTAL: _____

TO SCORE

Add together the points for each answer. Use the scale below to determine the level of dependence on nicotine.

Your level of dependence on nicotine is:

0-2: Very low dependence

3-4: Low dependence

5: Medium dependence

6-7: High dependence

8-10: Very high dependence

Scores under 5: “Your level of nicotine dependence is still low. You should act now before your level of dependence increases.”

Score of 5: “Your level of nicotine dependence is moderate. If you don’t quit soon, your level of dependence on nicotine will increase and you may become seriously addicted. Act now to end your dependence on nicotine.”

Score over 7: “Your level of dependence is high. You aren’t in control of your smoking - it is in control of you! When you make the decision to quit, you may want to talk with your doctor about nicotine replacement therapy or other medications to help you break your addiction.”

Source: Heatherton, T.F.; Kozlowski, L.T.; Frecker, R.C.; Fagerström, K.O. (1991). “The Fagerström Test for Nicotine Dependence: A Revision of the Fagerström Tolerance Questionnaire.” *British Journal of Addiction*, 86 (9): 1119-27

APPENDIX G

CLIENT SATISFACTION QUESTIONNAIRE-8

CLIENT SATISFACTION QUESTIONNAIRE

Circle your answer:

1. How would you rate the quality of service you have received?

4	3	2	1
Excellent	Good	Fair	Poor

2. Did you get the kind of service you wanted?

1	2	3	4
No, definitely	No, not really	Yes, generally	Yes, definitely

3. To what extent has our program met your needs?

4	3	2	1
Almost all of my needs have been met	Most of my needs have been met	Only a few of my needs have been met	None of my needs have been met

4. If a friend were in need of similar help, would you recommend our program to him or her?

1	2	3	4
No, definitely not	No, I don't think so	Yes, I think so	Yes, definitely

5. How satisfied are you with the amount of help you have received?

1	2	3	4
Quite dissatisfied	Indifferent or mildly dissatisfied	Mostly satisfied	Very satisfied

6. Have the services you received helped you to deal more effectively with your problems?

4	3	2	1
Yes, they helped a great deal	Yes, they helped	No, they really didn't help	No, they seemed to make things worse

7. In an overall, general sense, how satisfied are you with the service you have received?

4	3	2	1
Very satisfied	Mostly satisfied	Indifferent or mildly dissatisfied	Quite dissatisfied

8. If you were to seek help again, would you come back to our program?

1	2	3	4
No, definitely not	No, I don't think so	Yes, I think so	Yes, definitely